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Skeptical Inquirer

THE MAGAZINE FOR SCIENCE AND REASON

Volume 25, No. 1 • January/February 2001

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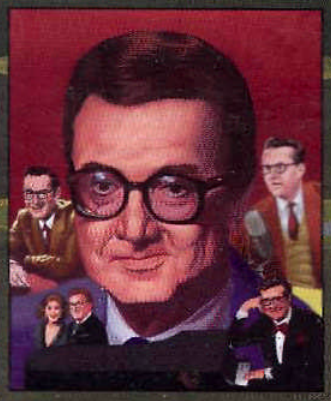

A Tribute to Steve Allen

Published by the Committee for the Scientific Investigation of Claims of the Paranormal

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AT THE CENTER FOR INQUIRY–INTERNATIONAL (ADJACENT TO THE STATE UNIVERSITY OF NEW YORK AT BUFFALO)

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The SKEPTICAL INQUIRER (ISSN 0194-6730) is published bimonthly by the Committee for the Scientific Investigation of Claims of the Paranormal, 1310 Sweet Home Rd., Amherst, NY 14228. Printed in U.S.A. Periodicals postage paid at Buffalo, NY. Subscription prices: one year (six issues), $35; two years, $58; three years, $81; single issue, $4.95. Canadian and foreign orders: Payment in U.S. funds drawn on a U.S. bank must accompany orders; please add US$10 per year for shipping. Canadian and foreign customers are encouraged to use Visa or MasterCard.

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Subscriptions and changes of address should be addressed to: SKEPTICAL INQUIRER, Box 703, Amherst, NY 14226-0703. Or call toll-free 1-800-634-1610 (outside U.S. call 716-636-1425). Old address as well as new are necessary for change of subscriber's address, with six weeks advance notice. SKEPTICAL INQUIRER subscribers may not speak on behalf of CSICOP or the SKEPTICAL INQUIRER.

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EDITOR'S NOTE

Nuances of Alternative Medicine, Passions of Steve Allen

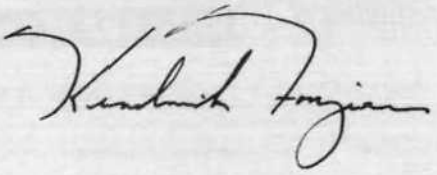
We offer four articles in this issue under the rubric "Issues in Alternative Medicine." Science journalist Barry F. Seidman begins with in-depth overview, "The Medicine Wars," based on reporting and interviews with leading experts representing a variety of responsible viewpoints. Articles on dangers of some herbal medicines and dietary supplements, the effects of four promising psychoactive herbal medications, and an examination of chiropractic follow. These articles strive to deal with the nuances and complexities of the issues. Together they complement our earlier special issue "Alternative Medicine in a Scientific World" (September/October 1997).

* * *

Steve Allen was one of the most extraordinary persons I've ever met. A true renaissance man. Talents in every direction. A giant in the early history of television. (Who can forget the characters and wild live skits on *The Steve Allen Show* or the literate *Meeting of Minds* history-reenactment series?) He was also an intellectual with a highly developed social conscience. He wrote books on humor and he wrote books on the Bible, religion, and morality. He wrote passionately on the need for critical thinking (his *Dumbth: The Lost Art of Thinking* came out in a new edition in 1998). He always had a tape recorder with him and every few minutes dictated his latest thought or idea. He died October 30. Just the day before, newspapers carried full-page ads announcing his campaign to get the entertainment media to raise their standards. The day of his death I received a catalogue announcing his next book, *Vulgarians at the Gate: Trash TV and Raunch Radio*, on that same concern about coarseness and incivility. He was a CSICOP Fellow and a tireless supporter of the Center for Inquiry, CSICOP, and the SKEPTICAL INQUIRER. He participated in (even starred in) many events for our organizations. He was also co-chairman of our Council for Media Integrity and co-chairman of our Fund for the Future campaign. His last piece in SI, "Two Mind Sets," appeared in our July/August 1999 Science and Religion issue. See Paul Kurtz's tribute in this issue.

* * *

When American journalists write about what they surely know is pseudoscientific nonsense, they nevertheless try to retain a moderate, even-handed, objective tone—as though there's a chance there may be something to whatever the weird assertion is. Journalists elsewhere seem more prone to just tell it like it is. They forthrightly skewer nonsense. One example, from the *London Evening Standard*, is related in a letter to the editor, "Clued-Up TV Critic," in this issue. Another reader, in Australia, sent me *The Canberra Times* TV magazine "The Guide" with another example—a mini-review by Ian Warden of a Fox-like program called "The Reincarnation Experiments." A few excerpts: "Perhaps the fact that I object so strongly to having to write 250 words about a TV program full of New Age mumbo jumbo on reincarnation indicates that in a past life I was too important a journalist to have to do such menial, intelligence-insulting chores." Warden says the program's producer/narrator appears to be "one of those poor souls who believe in everything and who has fallen completely for every reincarnation story told to him. . . . Everything is grist to Mr. Ramsden's credulist mill." Warden ends with a witty final salvo: "When I was a reporter working with *The Times* of London in the 1860s I never had to write about rubbish like this. Our rating: An insult to the intelligence of my spaniel."



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Exorcism and Suggestibility Study: False Memories of Possession Can Be Created

JOEL SCHWARZ

Couple the re-release of *The Exorcist* and the Halloween broadcast of *Possessed*, a TV docudrama about a purported exorcism in a mental hospital, and you've got a prescription for a sudden jump in the number reported demonic possessions.

"Quite a number of people who watch these exorcism films will be affected and develop symptoms of hysteria. These films will be a full-employment bill for exorcists," says Elizabeth Loftus, a University of Washington psychologist and memory expert (and a CSICOP Fellow).

Loftus recently completed a demonic possession study that is to be published in *The Journal of Experimental Psychology: Applied*. She conducted the study with Giuliana Mazzoni, a Seton Hall University psychology professor and a University of Washington visiting scholar; and Irving Kirsch, a University of Connecticut psychology professor. The research demonstrated that nearly one-fifth of those who previously said that demonic possession was not very plausible and that as children they had not witnessed a possession later said possession was more plausible and they may have witnessed one.

These changes in belief and memory were accomplished in several steps. Subjects read several short articles that described demonic possession and suggested it was more common than believed. Later they were asked to list their fears and then were told that witnessing a possession during childhood caused those fears.

"When you realize what we did with a few stories and a suggestion and then think of the very vivid depictions that are in these movies, I know these films are going to have a very powerful effect," Loftus says. The publication of the book *The Exorcist* in 1971 and the film's release at the end of 1973 generated reams of publicity and a mini-epidemic of people requesting exorcisms, she added.

In the study, the researchers recruited nearly 200 college students in Italy, where the idea of demonic possession is considered somewhat more plausible than it is in the United States. All of the students initially rated possession as highly implausible. They also had strong beliefs that they had not witnessed one as a child.

The researchers conducted three experiments. In the first and key experiment, students filled out questionnaires that rated the plausibility of a number of events and asked about their life experiences. Students were divided into three groups, two of which were exposed to a plausibility manipulation a month later. The two groups were given a series of twelve short articles to read. Among the

Winona Ryder in the supernatural thriller *Lost Souls*.

articles given to the first or "possession" group were three that promoted the idea that demonic possession is quite common in Italy and that many children witnessed such events. They also described typical possession experiences. The second or "almost choked" group was given three similar articles to read about choking. The third or control group was not exposed to the manipulation.

A week later the first two groups filled out questionnaires about their fears, such as being afraid of spiders. Then the students were told that their individual "fear profiles" signaled that they probably had witnessed a possession or had almost choked in early childhood. After another week these students and the control group filled out the original two questionnaires. The researchers found that the manipulation not only increased feelings of reality about an already plausible event, "almost choked," but also of an initially implausible event, "witnessed possession." More important, according to Loftus, 18 percent of the students now believed that the events had probably happened to them. There was no change in the control group.

The other two experiments tested variations of the manipulation.

Loftus says the three experiments tell a consistent story. When people are exposed to a series of articles describing a relatively implausible phenomenon, such as witnessing a possession, they believe the phenomenon is not only more plausible but also are less confident that they had not experienced it in childhood.

"We are looking at the first steps on the path down to creating a false memory," says Loftus. "There is controversy about whether you can plant memories about events that are unlikely to happen. As humans we are capable of developing memories of ideas that other people think occurred. Just being exposed to credible information can lead you down this path. This shows why people watching *Oprah* or those in group therapy believe these kinds of things happened to them. People borrow memories from others and adopt them as their own experiences. It is part of the normal process of memory."

In addition, she says the study reinforces the idea that therapists need to be careful in using potentially suggestive procedures that could change a patient's perceived likelihood of unremembered events. These include UFO abductions, serious trauma suffered in a past life, or participating in or witnessing satanic rituals (common elements in abuse claims).

"This study can help us understand how you can take normal people and create this kind of effect—make demonic possession seem plausible," Loftus says. "It normalizes this process and shows it can happen to a lot of people, not only to those who are considered to be 'kooks.'"

(For more on exorcism, see Joe Nickell's column in this issue.—*Eds*)

Joel Schwarz is with the University of Washington news and information office, Seattle.

Hotbed of Skepticism: Firewalk Held at Center for Inquiry International

On September 23, 2000, CSICOP headquarters once again served as a hotbed of skepticism, hosting its first-ever firewalk. The event was organized by University of Pittsburgh at Johnstown physicist David Willey, who holds the world record for the longest firewalk (see "World's Longest Firewalk: Physicist Leads Hot Trek for Science in Pennsylvania," SI 23[1], January/February 1999). Willey has also regularly been featured on *The Tonight Show with Jay Leno* as the "resident mad scientist," demonstrating scientific principles with impressive demonstrations. A crowd of about a hundred turned out to see the demonstration and hear Willey give a presentation on firewalking and handle a glowing-hot space shuttle tile.

One and a half cords of wood burned down to a twenty-four foot path of coals glowing at a brisk 1,000 degrees when Willey first stepped on it. He walked across the bed to cheers while news cameras filmed him. Other CSICOP employees followed Willey's walk, including Chairman Paul Kurtz, SKEPTICAL INQUIRER Managing Editor Benjamin Radford, Senior Research Fellow Joe Nickell, Public Relations Director Kevin Christopher, and CSICOP Executive Director Barry Karr. Members of the public were not permitted to walk for liability reasons.

Physicist David Willey walks on a bed of coals at CSICOP headquarters. Photo by Benjamin Radford.

The event was staged to help the public understand that the principles of firewalking need not invoke paranormal powers or "higher states" of consciousness, as is sometimes claimed by mystics, shamen, and self-help gurus. Said Paul Kurtz, "It's not a matter of paranormal powers or mind-over-matter; it's simple physics." For more information on firewalking, see "The Physics of Firewalking" by Bernard Leikind and William McCarthy in SI 10(1), Fall 1985.

—Benjamin Radford

Cracked Crystal Balls? Psychics' Predictions for Past Year a Litany of Prognostive Failures

Inquiring minds who want to know whether the world's greatest psychics and astrologers can really predict the future can get a valuable lesson from the forecasts made for 2000.

For example, the January 11, 2000 issue of the supermarket tabloid *Sun* included these forecasts from "the world's most gifted psychics":

• Prince Charles will fly in the space shuttle, where he will announce his engagement to Camilla Parker-Bowles, said "noted British astrologer" Gloria Goldberg.

• "Interactive TV will become so sophisticated by the end of the year you'll be able to tell your set what you want to eat . . . and the food will be waiting in the kitchen at the next commercial," according to Zambia's Henry Chipewo, who is on the blue-ribbon panel because he supposedly predicted the 1969 Moon landing.

• A large flesh-eating dinosaur will be discovered in Africa and "the shocking true identity of Satan will be discovered. . . . His face will be instantly recognizable to the American public," according to India's Sanjiv Mishra, who supposedly predicted the Kennedy Assassination.

• A summertime oil crisis will produce gas station lines longer than 1973, said Italian psychic Pier Rizutto.

• Two jumbo jets "will slam into each other in the air over the Atlanta airport" in March, according to Mexican astrologer Germano de Oliveria, who took a 50-50 chance when he predicted that Hillary Clinton would lose her bid to be U.S. Senator. He never mentioned the real surprise in the race: that Mayor Rudy Giuliani would drop out.

• "Three terrorists from the Middle East will be arrested at JFK Airport in April," police will discover a nuclear bomb in their baggage, and President Clinton will go on TV "warning Americans that other bombs may have slipped into the country undetected," said Russia's Isabel Almazen.

• An earthquake will "destroy Los Angeles and San Francisco" in May, and President Clinton will go on TV in February to "announce that the Mars Polar Lander was destroyed by aliens" and space "alien guests have already slept in the Lincoln Bedroom at the White House," according to Wanda Tarwinska.

• A "new and terrible" plague will begin in Africa in March and kill millions worldwide, said China's Mai Kai Sung.

But don't expect these abysmal results to convince the editors of the *Sun* to find a new crop of psychics. These are the same people they polled for 1999, when they forecast that Mrs. Clinton would run for President, an earthquake would lead to the abandonment of Los Angeles for two years, and John F. Kennedy Jr. would fly on the space shuttle with John Glenn, a prediction made the year Kennedy died in the plane crash.

Gary Spivey is quoted in the *Sun* as predicting the death of the Pope, but he made the same prediction for 1999. If at first you don't succeed. . . .

It wasn't just the supermarket tabloids that printed psychic forecasts without checking the reliability of their prognosticator. The *Toronto Sun* featured Anthony Carr, "the world's most documented psychic," who said Christopher Reeve would "rise from his chair and perambulate" and O.J. Simpson would either admit his guilt in 2000 or new evidence will prove that he is a murderer. If the editors had checked the January 5, 1999, *National Examiner* they would have found predictions attributed to Carr saying that in 1999 Muhammad Ali would make a miracle recovery from Parkinson's disease, an iceberg the size of California would threaten to wipe out Hawaii, and Carolyn Bessette-Kennedy (who died in the plane crash with her husband) would give birth to healthy twins.

Mystic Meg is another seer whose predictions, as published in the *Globe*, make it appear that she's dealing with a cracked crystal ball. She said 2000 would be the year Prince Andrew and Fergie re-wed, Tom Cruise and Nicole Kidman starred in a hit movie remake of Cinderella, Caroline Kennedy announced plans to run for Congress, and Jerry Springer became a crusading Jew for Jesus. All could still come true before December 31, but don't bet on it.

Like the late Jeane Dixon, the great equivocator who was well-known for her ability to fudge her forecasts, some of the psychics offered predictions for 2000 that were just as wishy-washy.

The *Star*'s Athena Starwoman wasn't exactly sticking out her neck when she said Bruce Willis "is likely" to have a son and Dolly Parton "may write" a book. She clearly missed an obvious milestone in her forecast for Kathie Lee Gifford, never mentioning Gifford's July departure from her show with Regis Philbin.

Some forecasts sound very specific when they are, in fact, exceptionally vague. Take Goldberg's prediction in the *Sun* that a DNA breakthrough "will allow humans to grow new body parts damaged by disease, accident, or old age." Doctors have been growing skin

for years, so any DNA-related advance in 2000 might, technically, allow her to claim success.

In the *Sun*, the "brilliant American psychic" Warren Freiberg seemed to be suggesting that the already-frail John Paul II would die in 2000. He said "the Pope will collapse in 2000 while on tour. Unfortunately, I don't see the poor man getting to his feet . . . ever again." But when pressed about the prediction when I joined him on a radio show last winter, Freiberg waffled, saying he didn't know if the Pope would die. But if the Pope should die by year's end, it's a safe prediction that Freiberg will want to go down in history as the man who predicted John Paul II's death.

On that same radio program, Freiberg acknowledged to me that two of his three 1999 forecasts in the *Sun* did not come true—that New York City would be quarantined when a mysterious cloud paralyzed millions of New Yorkers and the death of a blonde movie actress would produce a trial as dramatic as the O.J. Simpson case. However, he said those events could still happen in 2000. His third forecast was that "George Bush Jr." would become the next president. There was no presidential election in 1999. George W. Bush, son of ex-President George Herbert Walker Bush, is not George Bush Jr.

Other successes were not very impressive. Sylvia Browne, frequently featured on the *Montel Williams* talk show, correctly predicted that Brad Pitt and Jennifer Aniston would marry, but they had been dating for two and a half years. Browne's Web forecasts (www.sylvia.org) are open to multiple interpretations. But she didn't mince words with her presidential pick: "Democrats will win the election with Bill Bradley, with close competition from the Reform Party."

—*C. Eugene Emery Jr.*

Gene Emery, a reporter for the Providence Journal *and computer columnist for Reuters, has been collecting psychic predictions since 1979. Information on predictions for 1999 and previous years can be found at www.csicop.org.*

Sensationalism Six Pack: One Company Owns All the U.S. Supermarket Tabloids

The newspapers that publish more pseudoscience rubbish than anyone—the supermarket tabloids—are now owned by the same company.

According to the September 2000 issue of the *American Journalism Review*, American Media Inc., based in Palm Beach County, Florida, now owns the *National Enquirer*, *Star*, the *Globe*, *National Examiner*, *Sun* and *Weekly World News*.

In a story describing how American Media CEO David Pecker is trying to legitimize some of his tabloids to counter a decline in circulation, Darcie Lunsford outlined the various niches each tabloid is supposed to covet.

The *Enquirer*, the tabloid with the largest circulation, is trying to focus on big Hollywood hard news; it is using the motto "No Elvis. No aliens. No UFOs." Meanwhile, the *Star* is being retooled to concentrate on celebrities, the *Globe* is supposed to cover the spicy parts of a story, the *National Examiner*'s forte will be bizarre human-interest stories, and the *Sun* will use health and religious stories to appeal to the 55+ audience.

But at *Weekly World News*, expect more aliens, more UFOs, and more Elvis. Lunsford reported that there will be no change in the credo of editor Eddie Clontz's: "Never question yourself out of a good story. You have got to know when to stop asking questions."

The article is available online at http://ajr.newslink.org/ajrdarciesept00.html.

—*C. Eugene Emery Jr.*

Are Magnetic Shoes Starting to Attract Lawsuits?

The Consumer Justice Center, a nonprofit 501(c)(3) consumer group, filed a lawsuit on August 8, 2000, for false advertising and consumer fraud against Florsheim Group, Inc. for selling its MagneForce shoes as a pain remedy. The lawsuit was filed in Orange County, California, and asks that the footwear manufacturer be ordered to stop advertising the MagneForce shoes as a health aid, and to refund the purchase price to the class of persons who bought the shoes.

Apparently the pressure of the suit and adverse publicity has compelled Florsheim to abandon its pseudoscience marketing efforts—at least online. Many of the bizarre claims originally on the Florsheim Web site (www.florsheim.com) had been removed by mid-August 2000. However, the company was then still marketing its MagneForce shoes online with one tiny paragraph of concentrated junk science:

"The first shoe with its own power supply. Comfortable, quality footwear constructed with a lightweight, flexible magnetic insole to generate a deep-penetrating magnetic field which increases circulation; reduces foot, leg and back fatigue; provides natural pain relief and

improved energy level."

Finally (as of mid-September 2000), Florsheim relented and removed any trace of claims that the magnets in its footwear had health or pain-relief benefits. "Comfortable, quality footwear constructed with a lightweight, flexible magnetic insole."

Stories on the lawsuit against Florsheim have appeared in the *Los Angeles Times*, the *Denver Post*, the *National Post* (Canada), and even *Footwear News*, a magazine devoted to coverage of the footwear industry.

Florsheim is by no means the only major corporation marketing magnetic therapy products. Other major names include Dr. Scholl's. (See "Dr. Scholl's Steps into Pseudoscience with Magnetic Insoles," SI July/August 2000 24[4].) And smaller magnet therapy companies market their wares alongside more mainstream sports and footwear products on Web sites and catalogs, and in stores.

This is not the first time that a corporation has become entangled in legal disputes by making therapeutic claims for its magnet therapy products. In 1998 the Texas Attorney General filed an Assurance of Voluntary Compliance (AVC) against Magnetherapy, Inc., requiring that the company stop making claims that magnets "can cure, treat or mitigate any disease or that they can affect [*sic*] any change in the human body." The order also required the company to "withdraw false labeling and advertising from the marketplace within 120 days" and pay a $30,000 penalty to the Office of the Attorney General to reimburse the state for legal and investigative fees. (See "Magnet Therapy Update," SI September/October 2000 24[5].)

In case you didn't know, Magnetherapy, Inc. was the company Florsheim worked closely with to develop its line of magnetic footwear. Go figure.

—Kevin Christopher

Kevin Christopher is Public Relations Director for CSICOP.

Olympic Spoon-Bending: Failed Flame Fires Geller Claim

At the climax of the opening ceremony of the 2000 Olympics, Australian runner Cathy Freeman ignited the Olympic flame, a circle of gas jets that slowly rose out of the pool of water at her feet. But just after clearing Freeman's head, the flaming cauldron suddenly stopped, causing technicians to scramble behind the scenes to try to nudge it back on its way.

Instead of looking for a short circuit or a mechanical failure, however, apparently Olympic officials should have just picked up the phone and called Uri Geller. Why? Because, halfway around the world, Geller was using his tremendous mind power to stall the Olympic flame. At least that's what Geller claimed, *after the fact.*

The prolific Israeli spoon bender, now living west of London, says he was at home watching the opening ceremony on television when he decided to channel his thoughts onto the flame. Geller says he concentrated on the cauldron for eleven minutes, choosing that length of time because eleven is his "mystical number" that gives him special powers.

Olympic officials, however, say the temporary glitch—the flame resumed its ascent after about five minutes—was most likely caused by a stray piece of wood that had fallen onto the track on which the massive cauldron was riding. Nevertheless, Geller's claim was dutifully reported by the Associated Press, and it made its way into the *Telegraph* (U.K.), London's *Sunday Mail,* and other news reports. Geller told the media that his purpose in stopping the flame was to publicize his vision of global nuclear disarmament.

Geller did not respond to an e-mail requesting brief answers to three straightforward questions about the matter. But his Web site is filled with similar after-the-fact claims.

Geller's interest in the world of sports began long before this year's Olympic games. He says he discovered his "psychic coaching" abilities when he was just twelve years old and living in Cyprus, where his mother ran a small hotel popular with soccer players. That year, says Geller, he trained players on a local team to use their mind power to "will" the ball into the goal. The strategy worked so well, says Geller, that the team went from the bottom of the league to the championship. And in the mid-1970s, Geller says he taught boxer Muhammad Ali to push his opponents over with the power of his mind.

More recently, Geller used an "energized amethyst crystal" to help a marathoner recover from a devastating bicycle accident and compete in the 1997 London marathon. In a story that received coverage in running magazines, Geller claims he coached Ruth Steward to tap into her mind's power to heal her fractured skull and broken bones and teeth, the result of a bike accident that occurred just five months before the marathon. Steward claims she would not have been able to compete in the marathon without the crystal to awaken her dormant mind power. Geller was also at the marathon, and says he "logged on" to Steward telepathically during the race to help her overcome her pain.

Several of Geller's many commercial enterprises seem geared to serve athletes seeking a competitive edge. His book *Mind Medicine* promises to "harness the healing powers of your mind" and the "Uri Geller Mind Power Kit" (which comes with your very own "empowered crystal") is for those who want to train the dormant energy within to achieve their goals.

—Tim Walker

Tim Walker works for the National Marrow Donor Program, based in Minneapolis, Minnesota. □

Fund for the Future

CSICOP AT THE CENTER FOR INQUIRY

CFI-International
Amherst, N.Y.

Promote CSICOP

Using the Media & Telecommunications to Promote Science and Reason

The Fund for the Future is a capital campaign to provide CSICOP with the resources needed to more effectively influence media and public opinion. The 90s were defined by a telecommunications revolution, along with an explosion of misinformation available to the scholar and citizen alike. The hunger for superstition, pseudoscience, the paranormal and miraculous solutions has never been more acute.

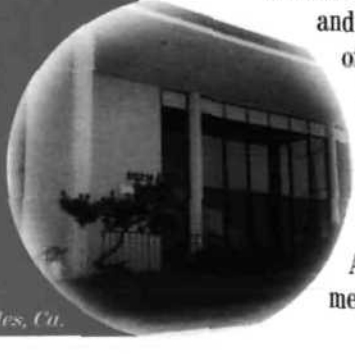
The Ten-Year Plan

CFI-Midwest
Kansas City, Mo.

Contributions are needed for current priorities:

- Increased media appearances by skeptical spokespersons
- Press releases, opinion pieces and media alerts
- Greater exposure through the Internet, including webcasting
- National initiatives coordinated by the Council for Media Integrity
- Instructional materials introducing skepticism to elementary and secondary school students
- Video production

How Can You Help?



CFI-West
Los Angeles, Ca.

CSICOP has established its expertise and integrity. It's time to command more media attention and a larger audience. The Center for Inquiry Fund for the Future is about new methods of outreach and broader influence, and is driven by an ambitious ten-year strategic plan for growth.

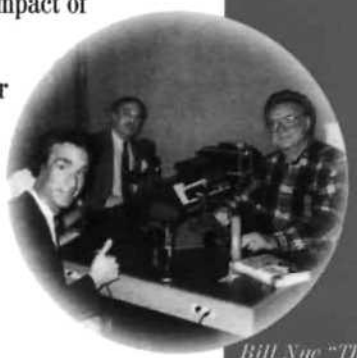
We depend on the support of readers and friends to continue leading the international skeptical movement. Gifts to the Fund for the Future provide the resources we need to respond to today's challenges.

All gifts are gratefully accepted. The Fund for the Future welcomes gifts of encouragement and major investments.

Cash contributions and gifts of stock are needed for immediate growth and new initiatives. We also offer a range of planned giving opportunities, from bequests to assorted tax-advantaged trusts and pooled funds. Planned gifts support our work in the future and can provide an income stream for you and a beneficiary. You may also make a gift supporting the general endowment, or establish a special purpose fund underwriting a long-term project that expresses your personal interests and commitment to skepticism.

In today's stock market, gifts of highly appreciated securities offer particular advantages to the donor. When donating stock to a charitable organization, you avoid taxes and maximize the impact of the asset you are donating.

Contact the Development Director at (716) 636-7571 to discuss accomplishing your philanthropic and financial goals and contributing to the Fund for the Future.



Bill Nye "The Science Guy," Joe Nickell, and entertainer Steve Allen appear on a radio show.

CSICOP
at the Center for Inquiry
P.O. Box 703
Amherst, NY 14226-0703
(716) 636-1425 ext. 311
Fax (716) 636-1733

Council for Media Integrity

Co-chair of the Fund for the Future Campaign: above, author and critic Martin Gardner.

Formed just weeks after its inclusion in the Ten-Year Plan, the Council for Media Integrity monitors and challenges media programs that convey unfounded claims and mislead the public about science. Members include E. O. Wilson, Stephen Jay Gould, and many others. CSICOP will invest in electronic infrastructure to facilitate rapid response to irresponsible programs.

Enhanced Library Resources

The Center for Inquiry's skeptics' library—already the finest of its kind in the world—needs additional funding to enlarge its core collection and add electronic media. Worldwide modem access to the library's catalog is already nearly complete.

Adult Education

The Council cosponsors the Center for Inquiry Institute, which has already expanded its offerings to include a new three-year certificate program in science and skepticism. Courses are scheduled in Amherst, Los Angeles, and other cities.

Regional Outreach

With the establishment of The Center for Inquiry–West (Los Angeles), The Center for Inquiry–Midwest (Kansas City) and The Center for Inquiry–Rockies (Boulder, Colorado), giant steps have been taken to enhance direct field service to skeptical activists. Additional regional centers are planned, with expanded calendars of activities.

Focusing Upon the Young

To present the skeptical message more compellingly to the young, CSICOP will develop new materials—ranging from age-appropriate print publications to audio and video cassettes and instructional coursework. Goals include enhanced understanding of science and improved critical thinking skills.

Science Indicators 2000: Belief in the Paranormal or Pseudoscience

Every two years, the National Science Board, the policy-making arm of the National Science Foundation, publishes a massive report on the health of U.S. science. In enormous detail, these reports describe the support of research and development, the role of the government in basic research, the workforce for science and technology, the status of science and mathematics education, the relation between R&D and innovation and economic growth, and international cooperation in science. In recent times the reports have also surveyed in detail public attitudes and public understanding of science and technology, usually revealing that the public strongly supports science but doesn't understand it very well, especially the processes of science. The latest report, Science and Engineering Indicators 2000 **, adds a brief new section not seen in previous versions, "Belief in the Paranormal or Pseudoscience." We here publish that section of the report, with the cooperation of the chapter's primary author, Melissa Pollak, of NSF's Division of Science Resources Studies.— EDITOR*

Science and Technology: Public Attitudes and Public Understanding

Belief in the Paranormal or Pseudoscience[1]

- Belief in the paranormal: How common is it?
- Do the media have a role in fostering belief in the paranormal?
- What is being done to present the other side?

Does it matter if people believe in astrology, extrasensory perception (ESP), or that aliens have landed on Earth? Are people who check their horoscopes, call psychic hotlines, or follow stories about alien abductions just engaging in harmless forms of entertainment? Or are they displaying signs of scientific illiteracy?

Concerns have been raised, especially in the science community, about widespread belief in paranormal phenomena. Scientists (and others) have observed that people who believe in the existence of paranormal phenomena may have trouble distinguishing fantasy from reality. Their beliefs may indicate an absence of critical thinking skills necessary not only for informed decisionmaking in the voting booth and in other civic venues (for example, jury duty[2]), but also for making wise choices needed for day-to-day living.[3]

Specific harms caused by paranormal beliefs have been summarized as:

- a decline in scientific literacy and critical thinking;
- the inability of citizens to make well-informed decisions;
- monetary losses (psychic hotlines, for example, offer little value for the money spent);
- a diversion of resources that might have been spent on more productive and worthwhile activities (for example, solving society's serious problems);
- the encouragement of a something-for-nothing mentality and that there are easy answers to serious problems, for example, that positive thinking can replace hard work; and
- false hopes and unrealistic expectations (Beyerstein 1998).

For a better understanding of the harms associated with pseudoscience, it is useful to draw a distinction between science literacy and scientific literacy. The former refers to the possession of technical knowledge. Scientific literacy, on the other hand, involves not simply knowing the facts, but also requires the ability to think logically, draw conclusions, and make decisions based on careful scrutiny and analysis of those facts (Maienschein 1999; Peccei and Eiserling 1996).

The amount of information now available can be overwhelming and seems to be increasing exponentially. This has led to "information pollution," which includes the presentation of fiction as fact. Thus, being able to distinguish fact from fiction has become just as important as knowing what is true and what is not. The lack of this ability is what worries scientists (and others), leading them to conclude that pseudoscientific beliefs can have a detrimental effect on the well-being of society.[4]

Belief in the Paranormal: How Common Is It?

Belief in the paranormal seems to be widespread. Various polls have shown that

- As many as one-third of Americans believe in astrology, that is, that the position of the stars and planets can affect people's lives (Harris 1998, Gallup 1996, and Southern Focus 1998). In 1999, 7 percent of those queried in the NSF survey said that astrology is "very scientific" and 29 percent answered "sort of scientific." (See figure 1.) Twelve percent said they read their horoscope every day or "quite often"; 32 percent answered "just occasionally."[5]
- Nearly half or more believe in extrasensory perception or ESP (Gallup 1996; Southern Focus 1998). According to one poll, the number of people who have consulted a fortuneteller or a psychic may be increasing: in 1996, 17 percent of the respondents reported contact with a fortuneteller or psychic, up from 14 percent in 1990 (Gallup 1996).[6]
- Between one-third and one-half of Americans believe in unidentified flying objects (UFOs). A somewhat smaller percentage believes that aliens have landed on Earth (Gallup 1996; Southern Focus 1998).

Other polls have shown one-fifth to one-half of the respondents believing in haunted houses and ghosts (Harris 1998; Gallup 1996; Sparks, Nelson, and Campbell 1997), faith healing (Roper 1994, *USA Today* 1998), communication with the dead (Gallup 1996), and lucky numbers. Some surveys repeated periodically even show increasing belief in these examples of pseudoscience (*USA Today* 1998).

Belief in most—but not all—paranormal phenomena is higher among women than men. More women than men believe in ESP (especially telepathy and precognition), astrology, hauntings, and psychic healing. On the other hand, men have stronger beliefs in UFOs and bizarre life forms, for example, the Loch Ness monster (Irwin 1993). In the NSF survey, 39 percent of the women, compared with 32 percent of the men, said astrology is "very" or "sort of" scientific; 56 percent of the women, compared with 63 percent of the men, answered "not at all scientific."[7]

Not surprisingly, belief in astrology is negatively associated with level of education.[8] Among those without high school diplomas, only 41 percent said that astrology is "not at all scientific." The comparable percentages for high school and college graduates are 60 percent and 76 percent, respectively.

Do the Media Have a Role in Fostering Belief in the Paranormal?

Scientists and others believe that the media—and in particular, the entertainment industry—may be at least partially responsible for the large numbers of people who believe in astrology, ESP, alien abductions, and other forms of pseudoscience. Because not everyone who watches shows with paranormal themes perceives such fare as merely entertaining fiction, there is concern that the unchallenged manner in which some mainstream media portray paranormal activities is exacerbating the problem and contributing to the public's scientific illiteracy.[9] In recent years, studies have been undertaken to determine whether televised depictions of paranormal events and beliefs influence television viewers' conceptions of reality (Sparks 1998). Although the results of these studies are tentative and require replication, all of them suggest that the way television presents paranormal subjects does have an effect on what viewers believe. For example,

- Those who regularly watch shows like *The X-Files*, *Unsolved Mysteries*, and *Sightings* were significantly more likely than those who did not watch these programs to endorse paranormal beliefs (Sparks, Nelson, and Campbell 1997).[10]
- Shows about paranormal phenomena, including UFOs, without disclaimers are more likely than those with disclaimers to foster belief in the paranormal. (Sparks, Hansen, and Shah 1994; Sparks and Pellechia 1997).
- Some fans of *The X-Files* find the show's storylines "highly plausible," and also believe that the government is currently conducting clandestine investigations similar to those depicted on the series (Evans 1996).

What Is Being Done To Present the Other Side?

The Committee for the Scientific Investigation of Claims of the Paranormal (CSICOP) is a nonprofit scientific and educational organization started in 1976 by scientists (including several Nobel laureates), members of the

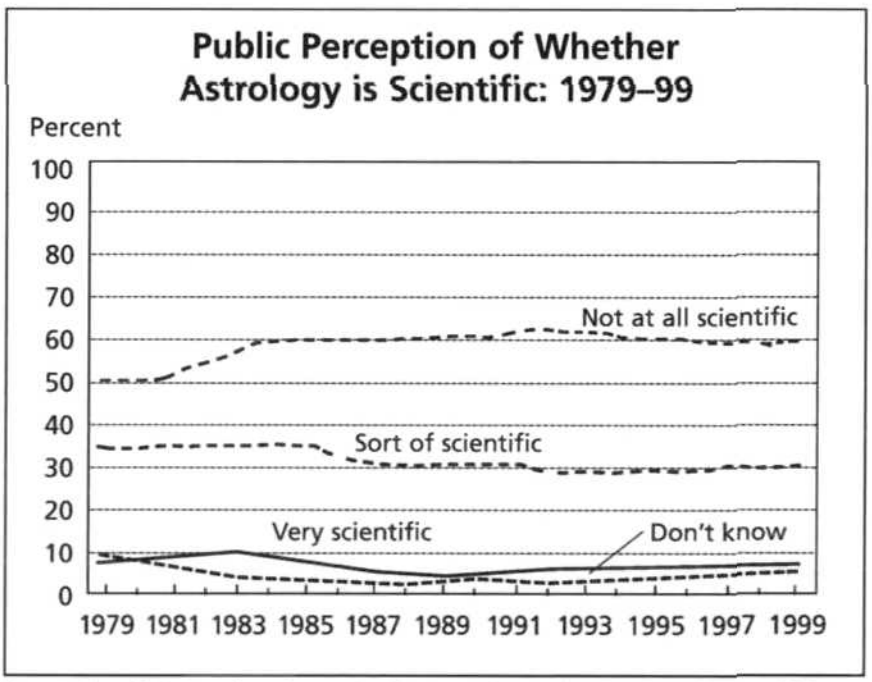


Figure 1. The public's view of astrology as scientific. From *Science and Engineering Indicators—2000*.

academic community, and science writers. Members of CSICOP, frequently referred to as skeptics, advocate the scientific investigation of paranormal claims and the dissemination of factual information to counter those claims.

CSICOP's mission includes taking advantage of opportunities to promote critical thinking, science education, and the use of reason to determine the merits of important issues.[11]

The Council for Media Integrity, an educational outreach and advocacy program of CSICOP, was established in 1996. Its objective is to promote the accurate depiction of science by the media. The Council, which includes distinguished international scientists, academics, and members of the media, believes it is necessary to counteract the entertainment industry's portrayal of paranormal phenomena because:

- television has such a pervasive impact on what people believe;
- an increasing number of shows are devoted to the paranormal, and they attract large audiences;
- a number of shows use a documentary style to promote belief in the reality of UFOs, government coverups, and alien abductions;
- opposing views are seldom heard in shows that advocate belief in the paranormal; and
- some shows contribute to scientific illiteracy by promoting unproven ideas and beliefs as real, instilling a distrust of scientists[12] and fostering misunderstanding of the methods of scientific inquiry.

To promote media responsibility—particularly within the entertainment industry—and to publicize irresponsibility—the Council established two awards[13]:

- The "Candle in the Dark Award" is given to television programs that have made a major contribution to advancing the public's understanding of science and scientific principles. The 1997 and 1998 awards went to two PBS programs: *Bill Nye The Science Guy* and *Scientific American Frontiers.*
- The "Snuffed Candle Award" is given to television programs that impede public understanding of the methods of scientific inquiry. The 1997 and 1998 winners were Dan Akroyd, for promoting the paranormal on the show *Psi-Factor*, and Art Bell, whose radio talk-show promoted belief in UFOs and alien abductions.

In its efforts to debunk pseudoscience, the Council also urges TV producers to label documentary-type shows depicting the paranormal as either entertainment or fiction, provides the media with the names of expert spokespersons, asks U.S. newspapers to print disclaimers with horoscope columns, and uses "media watchdogs" to monitor programs and encourage responsibility on the part of television producers.

Finally, various skeptics groups and renowned skeptic James Randi have long-standing offers of large sums of money to anyone who can prove a paranormal claim. Randi and members of his "2000 Club" are offering more than a million dollars. So far, no one has met the challenge.

Notes

1. Pseudoscience has been defined as "claims presented so that they appear [to be] scientific even though they lack supporting evidence and plausibility." In contrast, science is "a set of methods designed to describe and interpret observed and inferred phenomena, past or present, and aimed at building a testable body of knowledge open to rejection or confirmation" (Shermer 1997). Paranormal topics include yogic flying, therapeutic touch, astrology, fire walking, voodoo magical thinking, Uri Geller, placebo, alternative medicine, channeling, Carlos hoax, psychic hotlines and detectives, near-death experiences, UFOs, the Bermuda Triangle, homeopathy, faith healing, and reincarnation (Committee for the Scientific Investigation of Claims of the Paranormal).

2. Because of several well-publicized court cases, considerable attention has been focused on the role of science in the courtroom and the ability of judges and juries to make sound decisions in cases involving highly complex, science- or technology-based evidence. (See Angell 1996 and Frankel 1998.)

3. A fairly common example that reflects a dearth of critical thinking skills is the number of people who become victims of get-rich-quick (for example, pyramid) schemes.

4. According to James Randi, "acceptance of nonsense as mere harmless aberrations can be dangerous to us. We live in an international society that is enlarging the boundaries of knowledge at an unprecedented rate, and we cannot keep up with much more than a small portion of what is made available to us. To mix our data input with childish notions of magic and fantasy is to cripple our perception of the world around us. We must reach for the truth, not for the ghosts of dead absurdities" (Randi 1992).

5. In the 1996 Gallup Poll, 18 percent of respondents said they read an astrology column regularly.

6. At the First Amendment Center's forum on science and the media, one of the participants cited what he called the "most frightening" results of a poll of students in Columbia's graduate school of journalism: 57 percent of the student journalists believed in ESP; 57 percent believed in dowsing; 47 percent in aura reading; and 25 percent in the lost continent of Atlantis (J. Franklin cited in Hartz and Chappell 1997).

7. In an earlier NSF survey, 6 percent of the female—compared with 3 percent of the male—respondents reported changing their behavior because of an astrology report.

8. A survey of 1,500 first-year college students found that 48.5 percent of arts—and 33.4 percent of science—students considered both astronomy and astrology scientific (De Robertis and Delaney 1993).

9. Examples of pseudoscience that receive a considerable amount of coverage in the mainstream media are unproven health-related therapies. Also, as Carl Sagan pointed out, almost every newspaper has an astrology column, but not many have even a weekly column devoted to science.

10. This result could simply mean that people who believe in the paranormal are more likely than others to watch such programs. However, the findings are consistent with the conclusions of earlier experiments conducted by the same researcher (Sparks 1998).

11. CSICOP's official journal the SKEPTICAL INQUIRER is a vehicle for disseminating and publicizing the results of scientific studies of paranormal claims.

12. According to one study, scientists are portrayed more negatively than members of any other profession on prime-time entertainment shows. They are more likely to be killed or to kill someone. In fact, the study found that 10 percent of the scientists on fictional TV shows get killed and 5 percent kill someone (Gerbner 1987).

13. The award titles were inspired by Carl Sagan's book, *The Demon-Haunted World: Science as a Candle in the Dark* (Sagan 1996).

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when you provide for the *Skeptical Inquirer* in your will.

CSICOP and the *Skeptical Inquirer* changed the terms of discussion in fields ranging from pseudoscience and the paranormal to science and educational policy. You can take an enduring step to preserve their vitality when you provide for the *Skeptical Inquirer* in your will.

Your bequest to CSICOP, Inc., will help to provide for the future of skepticism as it helps to keep the *Skeptical Inquirer* financially secure. Depending on your tax situation, a charitable bequest to CSICOP may have little impact on the net size of your estate—or may even result in a greater amount being available to your beneficiaries.

We would be happy to work with you and your attorney in the development of a will or estate plan that meets your wishes. A variety of arrangements are possible, including: gifts of a fixed amount or a percentage of your estate; living trusts or gift annuities, which provide you with a lifetime income; or a contingent bequest that provides for the *Skeptical Inquirer* only if your primary beneficiaries do not survive you.

For more information, contact Barry Karr, Executive Director of CSICOP, at **(716) 636-1425**. All inquiries are held in the strictest confidence.

A Tribute to Steve Allen

PAUL KURTZ

Steve Allen, who died Oct. 30, 2000, was a unique, even heroic, figure in popular American culture. He was closely identified with the entertainment industry, and was heralded as one of the pioneers of television talk shows. His talents were multifarious: He was a comedian, wrote thousands of songs, innumerable short stories, novels, plays, and books.

I had known and worked with Steve Allen for almost thirty years—as a friend and colleague and in my capacity as publisher of Prometheus Books and as Chairman of CSICOP and the Council for Secular Humanism. His intellectual interests were encyclopedic, his devotion to liberal and charitable causes exemplary. He was his own man, standing against the bombast and bunkum of the passing parade.

He was a powerful advocate of the skeptics movement; and he did what he could to further its aims, ever willing to speak at our conferences and workshops. He never tired of lending his support to our efforts. We are particularly grateful for the fact that he was at the inaugural openings of the Center for Inquiry in Amherst, New York (1995) and the Center for Inquiry–West in Los Angeles (1997).

Most notably, Steve Allen accepted the appointment as Co-chairman (along with Nobel laureate Glenn Seaborg) of the Council for Media Integrity, a CSICOP-sponsored organization aimed at getting some balance in scientific reporting in the media and some fairness in evaluating pseudoscientific claims.

Most recently he took TV and movies to task for their excessive violence and vulgarity, though many of his former libertarian friends turned against his campaign against obscenity in the mass media because he allied himself with conservatives—as well as liberals, I might add.

Steve Allen felt a special responsibility to improve the quality of the electronic media. It is not sensationalism or ratings (the bottom line), he said, that should be the sole criteria of programming, but the ideas and values that are expressed. Although he believed in freedom of expression and was opposed to censorship, he thought that the public have every right to criticize the purveyors of false or tasteless programs.

Gerald Fried

Last spring I invited Steve to a humanist conference in Los Angeles to test his ideas before a liberal audience—and he withstood both criticism and applause with decorum and aplomb. His controversial views will appear in *Vulgarians at the Gate—TV Trash and Raunch Radio: Raising the Standards of Popular Culture*, which will be published posthumously by Prometheus Books in April 2001.

All told, Steve published fifteen books with Prometheus, including *Dumbth: The Lost Art of Thinking with 101 Ways to Reason Better and Improve Your Mind* (reissued in 1998)—which became a bestseller. Critical thinking was high on his agenda. He produced *Gullible's Travels*, an audiotape for Prometheus Books with original music and script (read and sung by him and his wife, Jayne Meadows), "in order to introduce youngsters to the brain and its proper use."

His award-winning television series *Meeting of the Minds*, which he wrote and produced (with Jayne, two decades ago), stands out in distinguished contrast with the mundane wasteland of televised fare. This series pitted Socrates, Marie Antoinette, Sir Thomas More, Tom Paine, Karl Marx, Emily Dickinson, Galileo, Charles Darwin, and other historical figures in dialogue and disputation. When efforts were made by Prometheus (which had published four volumes of the scripts of *Meeting of the Minds*) to relaunch the series, it was difficult to find syndicators because many in the television industry felt that the series was "too thoughtful" for the American public—a sad commentary on the decline of taste and intelligence.

Two of his most courageous books were critiques of the Bible (*Steve Allen on the Bible, Religion and Morality* [1989] and a sequel). Martin Gardner, in the preface to the first volume, compared this favorably with Tom Paine's *The Age of Reason*. Steve was willing to publish these books because he wished to counter the rise of the Religious Right. What other celebrity in the American media would have the courage to do so? All that we have on the national scene today are professions of piety, almost never reflective dissent—a testament to the independence of the man.

Steve Allen was a freethinker—skeptic and humanist—in the best sense of those terms. His creative accomplishments were so many that I could only touch on some of them. What a grievous loss his death is to American culture and to those of us who knew him personally, admired, and loved him. □

Facilitated Communication: A Cruel Farce

My previous column was about the myth, so vigorously promoted by Dr. Bruno Bettelheim, that autism is caused by "refrigerator mothers"—mothers with cold, unloving personalities. During the past two decades other preposterous myths about autism have flourished. One is the widespread belief among agonized parents that their child's autism is caused by early vaccinations. Because there is not a shred of evidence for this, I shall not waste space on it here. My topic is a much more pervasive, more cruel myth—the belief that hiding inside the head of every child with autism, no matter how severe, is a normal child whose intelligent thoughts can emerge through a curious technique called facilitated communication (FC).

Here's how FC works. An autistic child is seated at a typewriter or computer keyboard, or perhaps just a sheet of paper with the keyboard drawn on it. (Although autism strikes both sexes, males outnumber females four to one so I shall use the pronoun "he" for any child with severe autism.) A therapist, usually a woman, is called the child's "facilitator." She asks the child a question, then grasps his hand, wrist, or elbow—usually the hand—while the child extends his index finger and begins to type. The belief is that the child has the ability to communicate intelligent thoughts by typing, but lacks the muscular coordination needed for finding the right keys. The facilitator assists him in locating the keys she is sure he intends to hit.

A wondrous miracle now seems to take place. Although the child has been thought to be mentally retarded, unable to read, write, or speak coherently, he types out lucid, sophisticated messages that could only come from a normal, intelligent child.

This amazing technique was discovered in the early 1970s by Rosemary Crossley, of Melbourne, Australia. Educated only in the liberal arts, she and her associates founded the Dignity Through Education and Language Communication Center in Melbourne. Crossley is the author of numerous papers in technical journals, and a book titled *Annie's Coming Out* about one of her patients.

Enter Douglas Biklen, a professor of education at Syracuse University. When he first visited Crossley in the late 1980s he was skeptical of her methods, but soon became convinced that she had hit upon a revolutionary new technique. Today he considers her his "dear friend" and mentor. Back at Syracuse, Biklen founded the Facilitated Communication Institute, and quickly became the nation's top guru in promoting FC. Thousands of therapists have been trained in FC at his institute.

FC spread like wildfire across the nation and abroad. Dozens of FC centers were established around the U.S. where parents, for a sizeable fee, could bring a child with autism and have his normal mind released from the prison of his terrible disorder.

You can imagine the excitement and euphoria of parents long desperate for rational conversation with a loved child. They often wept with joy when they became convinced that their child could say to them through typing, "I love you, mom" or "I love you, dad." Not only that, but they typed long meaningful sentences, using words they were incapable of speaking. Some even wrote poetry.

This seemingly miraculous breakthrough was enthusiastically endorsed by the print and electronic media. Articles praising FC appeared in newspapers and popular magazines. *Reader's Digest* (March 1993) published "The Secret Life of Arthur Wold," a moving account of a child released by FC from the glass shell believed to have imprisoned his mind. Movies and television shows lauded the new technique.

That something was terribly wrong

Martin Gardner has two new books of essays: Did Adam and Eve Have Navels? Discourses on Reflexology, Numerology, Urine Therapy, and Other Dubious Subjects *(W.W. Norton, 2000), based on his* SKEPTICAL INQUIRER *Notes of a Fringe-Watcher columns; and* From the Wandering Jew to William F. Buckley Jr.: On Science, Literature, and Religion *(Prometheus Books, 2000), a collection of his other essays and reviews.*

with FC was obvious from the start to almost all psychiatrists, neuroscientists, and psychologists familiar with autism. For one thing, while the poor child was typing brilliant messages, he almost never looked at the keyboard. He would glance around the room, often smiling or giggling as if having fun, sometimes screaming, sometimes closing his eyes.

Skeptics checked with expert typists. Not one was capable of typing a sentence with one finger unless he or she could see the keyboard. This made no impression on facilitators or parents eager to believe. Therapists made the absurd claim that their children had the wonderful ability to memorize the keyboard so completely that they did not need to see it when they typed! Children with severe autism, unable to read, write, or speak clearly, found themselves in schools where they passed examinations in literature, arithmetic, and other subjects provided, of course, a facilitator was beside them, guiding their hand!

It quickly became obvious to everyone not caught up in the FC fad that the facilitators, although totally sincere, were naive and poorly trained. They were unaware of the strength of what is called the Ouija (or ideomotor) effect. Unconsciously they were guiding a child's finger to keys they imagined the child was seeking. In brief, it was they, not their patients, who did the typing.

As one would expect, because guiding a finger to a key is seldom accurate, the children's messages swarm with typos. Here are some typical examples reported by Biklen:

> I AMN NOT A UTISTIVC ON THJE TYP.
>
> MY MOTHER FEELS IM STUPID BECAUSE IH CANT USE MY VOICE PROPERLY.
>
> I AM VERY UPSET BECAUSE I NEED FACILITASION. I DONT WANT TO DEPEND ON PEOPLE.
>
> I AI DONT WANT TO BE AUTISTIC. NOBODY REALLY ZUNDERSTANDS WHAT IT FEELS LIKE. IT IS VERY LONELY AND I FEEL LOUSY. MY MOOD IS BAD A LOT. I FEEL LESS LONELI WHEN I AM WITH KIDS.

Is it possible to prove beyond any doubt that facilitators do the typing? Indeed, it is so ridiculously easy that promoters of FC must be simple-minded not to have thought of such simple tests. In one early test, made by skeptics, the child and his facilitator wore headphones. When a question was heard by both child and facilitator, the child typed a reasonable response. But when only the child heard the question, while the facilitator heard only music, the child's answer had no bearing on the question.

A simple visual test was even more dramatic. A picture on a cardboard folder was shown to both child and facilitator. The child accurately typed the target's name when his hand was held. In a repeat test, the experimenter showed the facilitator a picture, but this time, as he turned the folder so only the child could see the target, he secretly moved a flap that covered the first picture and exposed a different one. You can guess what happened. The child did not type the name of the picture he saw. He typed the name of the picture that only the facilitator had seen.

This definitive, unimpeachable test was featured in a marvelous documentary, "Prisoners of Silence," aired by the PBS series *Frontline* in October 1993. Many facilitators were devastated by the revelation that they had been deceiving themselves for years. One female therapist, interviewed by *Frontline*, was in tears.

The Ouija effect is far more powerful than most people realize. It explains why the planchette, in response to questions, glides so smoothly over the Ouija board to spell answers which seem to come from spirits. It is the secret behind rotating dowsing rods, table tipping, and automatic writing. Entire books have been written by hands that seem to be moved by spirit controls.

You can demonstrate the Ouija effect easily by tying a ring, or some other small weight, to a piece of string. Tell a friend that if she holds this little pendulum over a man's hand it will swing back and forth in a straight line. Held over a woman's hand it swings in ovals. You'll be surprised by how often this works, provided of course a person is told how the weight will swing.

In the late 1990s FC took an ugly turn. Overzealous facilitators, oblivious to the fact they they were doing the typing, began to produce messages accusing parents of sexually molesting their child! These messages often contained graphic four-letter obscene words. It is hard to believe, but uninformed police and judges, on the basis of such accusations, actually arrested dozens of innocent and astounded fathers. Some even went to jail for months, exhausting fortunes on legal defenses before enlightened judges tossed their cases out of court.

A recent case in England, reported in London newspapers on July 12, 1999, involved a teenage boy with a mental age of two who was suffering from extreme autism and unable to speak. With a hand guided by a facilitator he had typed accusations of sexual abuse by his fifty-year-old father. The boy was made a ward of the court until the court found no evidence of abuse. The judge, Dame Elizabeth Butler-Sloss, branded FC a dangerous, unverified technique that should never be used again in any British court to support sexual abuse charges.

In 1992 a group of facilitators at the University of Wisconsin, in Madison, became convinced that some of their children were gifted with psychic powers. For example, while they typed with their hand held, their sentences often revealed what their facilitator was thinking. Suspecting ESP, the facilitators began giving their children tests for telepathy. They would show a child a picture, for example of an elephant. Another child, in a distant room, would type "elephant" when asked what picture the other child had seen. Of course both facilitators knew the target was an elephant. The Madison facility was and is headed by Anne M. Donnellan, a professor of education with forty years of working with autistic children. Convinced that her patients had psychic abilities, she invited magician and psi-buster James Randi to visit Madison and evaluate the ESP evidence.

Randi realized at once, even before making the trip from his home in Florida to Madison, what was going on. The facilitators, not the children, were doing the typing. Naturally it would seem that the typing child was reading

their mind. The apparent ESP was explained by the fact that the facilitators were communicating with each other. In a letter to me before he left Florida, Randi predicted correctly that if he made a few simple tests in which the facilitator at the receiving end did not know the target, and no ESP took place, he would be met with strong resistance from the therapists. He would be accused of destroying ESP by his skepticism and his insulting experiments.

Randi's first test was to shuffle a set of cards with different pictures, then randomly select a card. A facilitator was asked to leave the room while Randi showed the picture to her child and to everyone else in the room. When the facilitator returned, held the child's hand, and asked him to name the picture he had seen, he typed only incorrect names. Similar tests for telepathy were also total failures. The receiving child was correct only when his facilitator knew the target.

As Randi anticipated, no one at the Madison facility welcomed his disclosures. The children too, their hands held, began to type such messages as "I don't like this man from Florida. He is upsetting my facilitator. Send him home."

"No one would like more than I to find that I am wrong," Randi wrote to me in his first letter. (At Madison he sent me daily reports of his investigations.) "It would be thrilling indeed to discover that autistic children, far from being incapable, isolated and mentally inferior . . . are actually capable of much more and only need to be released from their imprisonment."

Now that FC has been so thoroughly discredited, one would hope that FC leaders would admit they had been duped, and like the Arabs in Longfellow's "Day is Done," would fold their tents and silently steal away. Alas, true believers in a bogus science seldom change their minds or admit their mistakes. Biklen is still at Syracuse University, running his institute, and still convincing parents that hidden inside the glass shell of autism there is a bright, normal child who loves them and is eager to converse with them provided his hand is held by a facilitator. I should add that of course children with only mild autism can be taught to type rational messages without any help, and can grow up to lead normal, constructive lives.

Through high-priced seminars, and sales of videotapes and literature, it is estimated that Biklen is bringing millions of dollars annually to his university. This cannot, however, be the only reason why Kenneth Shaw, the president of Syracuse University, has made no effort to maneuver Biklen off the campus. He not only defends Biklen on the grounds that a university must allow free opinions to be held by any faculty member, but he also has defended Biklen's competence. "[Biklen] has had the intellectual rigour," Shaw told a reporter, "one would expect of qualitative research in this area."

Biklen has had no training in psychology, psychiatry, or work with the disabled. His doctorate at Syracuse was in sociology. His books include *Unbound: How Facilitated Communication is Challenging Traditional Views of Autism and Ability/Disability* (1993), and *Contested Words, Contested Science: Unraveling the Facilitated Communication Controversy* (1997). Both books were published by Columbia University's Teachers College Press. His institute publishes a periodical titled *Facilitator Communication Digest.*

Biklen's present position on FC is that some facilitators, inadequately trained, have unwittingly guided a child's hand, but he thinks they are a small minority. On his Web site in June 2000 he warned: "Facilitated Communication should never involve guiding a person as he or she attempts to point or type."

Donnellan edited *Classic Readings in Autism* (1985), published by Teacher's College Press. Her latest book, written in collaboration with Martha Leary, is *Movement Differences and Diversity in Autism/Mental Retardation* (1997), published by the DRI Press, Madison. Like Biklen, she grants that the Ouija effect may explain some of the typing by children with autism, but she firmly believes that the effect can be avoided by well-trained facilitators, and that most of the criticism of FC is unfounded.

In 1994 the American Psychological Association and the American Speech-Language-Hearing Association each declared that FC is without scientific validation.

In recent years the belief that therapists, using hypnosis and other techniques, could revive memories of childhood sexual abuse sent many innocent parents and teachers to prison. The tide began to turn when parents began suing therapists for fabricating such memories, and many of the prison sentences have been overturned by enlightened judges.

The same thing is happening, though on a smaller scale, with fathers falsely accused of sexually molesting a child because of information a child types with a hand held by a facilitator. Lawsuits against FC centers and increasing awareness of the Ouija effect by judges have now almost eliminated such cruel charges. Although a voodoo science seldom completely evaporates, one can hope that the FC farce, involving a mysterious malady more pervasive around the world than Down's syndrome, is finally coming to an end.

References for Further Reading

The literature on FC, pro and con, is vast, with hundreds of technical papers. I list here a few popular articles and one book that are not hard to access, and which will reinforce the opinions expressed in this column:

Anguished Silence and Helping Hands. James Mulick, John Jacobson, and Frank Kobie, in SKEPTICAL INQUIRER, Vol 17 (Spring 1993), pages 270–280.

Facilitated Communication, Autism, and Ouija. Kathleen Dillon, in SKEPTICAL INQUIRER, Vol. 17 (Spring 1993), pages 281–287.

Facilitated Communication: Mental Miracle or Sleight of Hand" Gina Green, in *Skeptic*, Vol. 2, No. 3 (1994), pages 69–76. Green is director of the New England Center for Autism, in Massachusetts.

Effectiveness of Facilitated Communication with Children and Youth with Autism. Richard Simpson and associates, in *The Journal of Special Education*, Vol. 28 (1995), pages 424–439.

Nonconscious Movements: From Mystical Messages to Facilitated Communication. Lawrence Erlbaum Associates, 1997.

Facilitated Communication or Manipulated Miscommunication. Becky Greben, in *Rocky Mountain Skeptic*, Vol. 13, No. 6 (1996), pages 1 ff.

Facilitated Communication in America. Brian J. Gorman, in *Skeptic*, Vol. 6, No. 3 (1998), pages 64–71.

The Little Professor Syndrome. Lawrence Osborne, in *The New York Times Magazine*, June 18, 2000, page 55ff. This article deals with Asperger's syndrome, a milder form of autism involving children with high intelligence who talk like adults, but lack social skills.

Understanding Autism. Geoffrey Cowley, in *Newsweek*, July 31, 2000. □

Exorcism! Driving Out the Nonsense

Belief in demonic possession is getting a new propaganda boost. Not only has the 1973 horror movie *The Exorcist* been re-released, but the "true story" that inspired it is chronicled in a reissued book and a made-for-TV movie, both titled *Possessed* (Allen 2000). However, a year-long investigation by a Maryland writer (Opsasnik 2000), together with my own analysis of events chronicled in the exorcising priest's diary, belie the claim that a teenage boy was possessed by Satan in 1949.

Psychology Versus Possession

Belief in spirit possession flourishes in times and places where there is ignorance about mental states. Citing biblical examples, the medieval Church taught that demons were able to take control of an individual, and by the sixteenth century demonic behavior had become relatively stereotypical. It manifested itself by convulsions, prodigious strength, insensitivity to pain, temporary blindness or deafness, clairvoyance, and other abnormal characteristics. Some early notions of possession may have been fomented by three brain disorders: epilepsy, migraine, and Tourette's syndrome (Beyerstein 1988). Psychiatric historians have long attributed demonic manifestations to such aberrant mental conditions as schizophrenia and hysteria, noting that—as mental illness began to be recognized as such after the seventeenth century—there was a consequent decline in demonic superstitions (Baker 1992, 192). In 1999 the Vatican did update its 1614 guidelines for expelling demons, urging exorcists to avoid mistaking psychiatric illness for possession ("Vatican" 1999).

In many cases, however, supposed demonic possession can be a learned role that fulfills certain important functions for those claiming it. In his book *Hidden Memories: Voices and Visions from Within*, psychologist Robert A. Baker (1992) notes that possession was sometimes feigned by nuns to act out sexual frustrations, protest restrictions, escape unpleasant duties, attract attention and sympathy, and fulfill other useful functions.

Many devout claimants of stigmata, inedia, and other powers, have also exhibited alleged demonic possession. For example, at Loudon, France, a prioress, Sister Jeanne des Anges (1602–1665), was part of a contagious outbreak of writhing, convulsing nuns. Jeanne herself exhibited stigmatic designs and lettering on her skin. A bloody cross "appeared" on her forehead, and the names of Jesus, Mary, and others were found on her hand—always clustered on her left hand, just as expected if a right-handed person were marking them. She went on tour as a "walking relic" and was exhibited in Paris to credulous thousands. There were a few skeptics, but Cardinal Richelieu rejected having Jeanne tested by having her hand enclosed in a sealed glove. He felt that would amount to testing God (Nickell 1998, 230–231). Interestingly enough, while I was researching and writing this article I was called to southern Ontario on a case of dubious possession that also involved stigmata.

Possession can be childishly simple to fake. For example, an exorcism broadcast by ABC's *20/20* in 1991 featured a sixteen-year-old girl who, her family claimed, was possessed by ten separate demonic entities. However, to skeptics her alleged possession seemed to be indistinguishable from poor acting. She even stole glances at the camera before affecting convulsions and other "demonic" behavior (Nickell 1998).

Of course a person with a strong impulse to feign diabolic possession may indeed be mentally disturbed. Although the teenager in the *20/20* episode reportedly improved after the exorcism, it was also pointed out that she continued "on medication" ("Exorcism" 1991). To add to the complexity, the revised Vatican guidelines also urge, appropriately, against believing a person is possessed who is merely "the victim of one's own imagination" ("Vatican" 1999).

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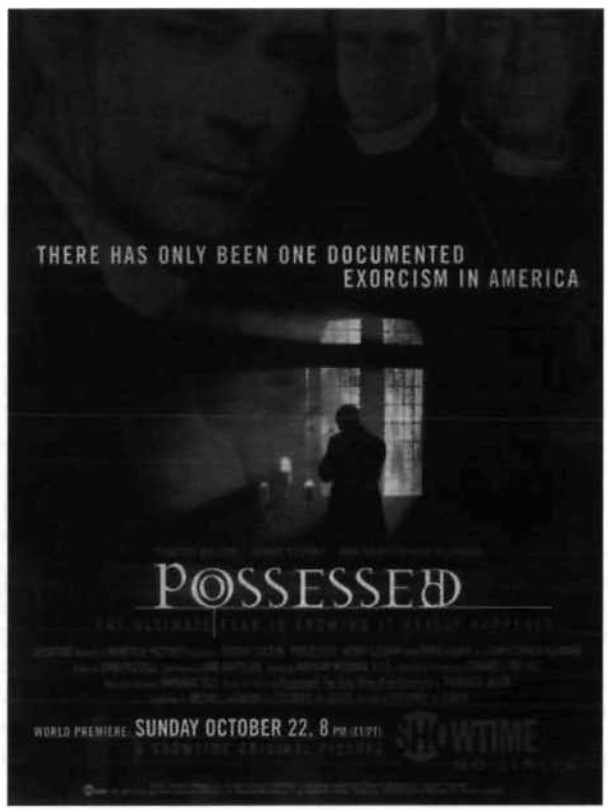
With less modern enlightenment, however, the guidelines also reflect Pope John Paul II's efforts to convince doubters that the devil actually exists. In various homilies John Paul has denounced Satan as a "cosmic liar and murderer." A Vatican official who presented the revised rite stated, "The existence of the devil isn't an opinion, something to take or leave as you wish. Anyone who says he doesn't exist wouldn't have the fullness of the Catholic faith" ("Vatican" 1999).

Unchallenged by the new exorcism guidelines is the acceptance of such alleged signs of possession as demonstrating supernormal physical force and speaking in unknown tongues. In the case broadcast by *20/20*, the teenage girl did exhibit "tongues" (known as *glossolalia* [Nickell 1998, 103–109]), but it was unimpressive; she merely chanted: "Sanka dali. Booga, booga." She did struggle against the restraining clerics, one of whom claimed that, had she not been held down, she would have been levitating! At that point a group of magicians, psychologists, and other skeptics with whom I was watching the video gleefully encouraged, "Let her go! Let her go!" (Nickell 1995)



"True Story"

Demonstrating prodigious strength, speaking in an unknown language, and exhibiting other allegedly diabolical feats supposedly characterize the "true story" behind *The Exorcist*. The 1973 horror movie—starring Linda Blair as the devil-plagued victim—was based on the 1971 bestselling novel of that title by William Peter Blatty. The movie, reports one writer, "somehow reached deep into the subconscious and stirred up nameless fears." Some moviegoers vomited or fainted, while others left trembling, and there were "so many outbreaks of hysteria that, at some theaters, nurses and ambulances were on call." Indeed, "Many sought therapy to rid themselves of fears they could not explain. Psychiatrists were writing about cases of 'cinematic neurosis'" (Allen 2000, viii–ix).

Blatty had heard about the exorcism performed in 1949 and, almost two decades later, had written to the exorcist to inquire about it. However the priest, Father William S. Bowdern, declined to assist Blatty because he had been directed by the archbishop to keep it secret. He did tell Blatty—then a student at Washington's Georgetown University, a Jesuit institution—about the diary an assisting priest had kept of the disturbing events (Allen 2000, ix–x).

The diary—written by Father Raymond J. Bishop—consisted of an original 26-page, single-spaced typescript and three carbon copies, one of which was eventually provided to Thomas B. Allen, author of *Possessed*, and included as an appendix to the 2000 edition of the book. The copy came from Father Walter Halloran, who had also assisted with the exorcism. Halloran verified the authenticity of the diary and stated that it had been read and approved by Bowdern (Allen 2000, 243, 301).

The diary opens with a "Background of the Case." The boy, an only child identified as "R," was born in 1935 and raised an Evangelical Lutheran like his mother; his father was baptized a Catholic but had had "no instruction or practice" in the faith. The family's Cottage City, Maryland, home included the maternal grandmother who had been a "practicing Catholic until the age of fourteen years" (Bishop 1949, 245).

On January 15, 1949, R and his grandmother heard odd "dripping" and scratching noises in her bedroom, where a picture of Jesus shook "as if the wall back of it had been bumped." The effects lasted ten days but were attributed to a rodent. Then R began to say he could hear the scratching when others could not. Soon a noise as of "squeaking shoes"—or, one wonders, could it have been bedsprings?—became audible and "was heard only at night when the boy went to bed." On the sixth evening the scratching noise resumed, and R's mother and grandmother lay with him on his bed, whereupon they "heard something coming toward them similar to the rhythm of marching feet and the beat of drums." The sound seemed to "travel the length of the mattress and back again" repeatedly (Bishop 1949, 246). Was R tapping his toes against the bed's footboard?

Poltergeists and Ouija Spirits

At this point the case was exhibiting features often attributed to a *poltergeist* (or "noisy spirit"). Poltergeist phenomena typically involve disturbances—noises, movement of objects, or, rarely, serious effects like outbreaks of fire—typically centering around a disturbed person, usually a child. Believers often attribute the occurrences to "psychokinetic energy" or other mystical force imagined to be produced from the repressed hostilities of the pubescent child. Skeptics can agree with all but the mystical part, observing that one does not explain an

unknown by invoking another. Skeptics have a simpler explanation, attributing the effects to the cunning tricks of a naughty youth or occasionally a disturbed adult. When such cases have been properly investigated—by magicians and detectives using hidden cameras, lie detectors, tracer powders (dusted on objects likely to be involved), and other techniques—they usually turn out to be the pranks of young or immature mischief-makers.

Consider some of the "other manifestations" associated with R in the early part of the case, as recorded in the diary:

> An orange and a pear flew across the entire room where R was standing. The kitchen table was upset without any movement on the part of R. Milk and food were thrown off the table and stove. The bread-board was thrown on to the floor. Outside the kitchen a coat on its hanger flew across the room; a comb flew violently through the air and extinguished blessed candles; a Bible was thrown directly at the feet of R, but did not injure him in any way. While the family was visiting a friend in Boonesboro, Maryland, the rocker in which R was seated spun completely around through no effort on the part of the boy. R's desk at school moved about on the floor similar to the plate on a Ouija board. R did not continue his attendance out of embarrassment [Bishop 1949, 248].

It is well to consider here the sage advice of the late investigator and magician Milbourne Christopher not to accept statements of what actually happened from the suspected "poltergeist." Regarding one such case Christopher (1970, 149–160) pointed out that all that was necessary to see the events not as paranormal occurrences but as deliberate deceptions was to "suppose that what the boy said was not true, that he was in one room when he said he was in another in some instances. Also let us suppose that what people thought they saw and what actually happened were not precisely the same." Experience shows that even "reliable witnesses" are capable of being deceived. As one confessed "poltergeist"—an eleven-year-old girl—observed: "I didn't throw all those things. People just imagined some of them" (Christopher 1970, 149). In the case of R, we must realize that the previously described events (the flying fruit, etc.) were not witnessed by Father Bishop, who reported them in his diary as background to the case, and so were necessarily second-hand or worse.

The case of R, which began as a seeming poltergeist outbreak, soon advanced to one of alleged spirit communication, before finally escalating to one of supposed diabolic possession.

It was indeed trickery that was behind the poltergeist-like disturbances of 1848 that launched modern spiritualism. As the Fox Sisters confessed decades later, their pretended spirit contact began as the pranks of "very mischievous children" who, Margaret Fox explained, began their shenanigans "to terrify our dear mother, who was a very good woman and very easily frightened" and who "did not suspect us of being capable of a trick because we were so young." The schoolgirls threw slippers at a disliked brother-in-law, shook the dinner table, and produced noises by bumping the floor with an apple on a string and by knocking on the bedstead (Nickell 1995).

The Fox Sisters were followed in 1854 by the Davenport Brothers, schoolboys Ira and William, who were the focus of cutlery that danced about the family's kitchen table, and other odd events. Ira sometimes claimed that, when alone, spirits had whisked him to distant spots. Soon the boys advanced to spirit-rapped messages, "trance" writing and speaking, and other "spirit manifestations." In his old age, Ira confessed to magician/paranormal investigator Harry Houdini that the brothers' spirit communication—which launched and maintained their careers as two of the world's best-known spiritualistic mediums—had all been produced by trickery. Indeed, they had been caught in deceptions many times (Nickell 1999).

The Foxes and Davenports are not isolated examples. It should therefore not be surprising to learn that the case of R, which began as a seeming poltergeist outbreak, soon advanced to one of alleged spirit communication, before finally escalating to one of supposed diabolic possession.

R had been close to an aunt, who often visited from St. Louis. A devoted Spiritualist, she introduced R to the Ouija board. With their fingers on the planchette, they saw it move about the board's array of printed letters, numbers, and the words *yes* and *no* to spell out messages—she told him—from spirits of the dead. (Actually, as skeptics know, the planchette is moved not by spirits but by the sitters' involuntary—or voluntary!—muscular control [Nickell 1995, 58].) She also told R and his mother how, "lacking a Ouija board, spirits could try to get through to this world by rapping on walls" (Allen 2000, 2).

R had played with the Ouija board by himself. Then began the outbreak of noises, and eleven days later he was devastated by his aunt's death in St. Louis. He returned to the Ouija board, spending hours at the practice and "almost certainly" used it to try to reach his beloved aunt (Allen 2000, 2–6). As R, his mother, and grandmother lay in R's bed and listened to the drumming sound, his mother asked aloud whether this was the aunt's spirit. If so, she added, "Knock three times" (thus adopting a practice of the Fox Sisters). Thereupon, the diary records that the three felt "waves of air" striking them and heard distinct knocks followed by "claw scratchings on the mattress."

Possession?

Then, for approximately four continuous nights, markings appeared on the teenager's body, after which the claw-like scratches took the form of printed words. Whenever the scratching noise was ignored the mattress began to shake, at times violently, and at one

time the coverlet was pulled loose (Bishop 1949, 246–247).

R's parents were becoming frantic. They had watched their son become unruly, even threatening to run away, and he seemed to be "on the verge of violence" (Allen 2000, 57). They sought help from a physician, who merely found the boy "somewhat high-strung," then from a psychologist, whose opinions went unrecorded. A psychiatrist found R to be "normal," but "declared that he did not believe the phenomena." A Spiritualist and two Lutheran ministers were consulted (Bishop 1949, 248). One of the latter eventually advised the parents, "You have to see a Catholic priest. The Catholics know about things like this" (Allen 2000, 24).

A young priest was called in, but the boy's condition was worsening and R was admitted to a Jesuit hospital, some time between February 27 and March 6. The priest, Father E. Albert Hughes, prepared for an exorcism as seeming poltergeist and demonic outbreaks intensified. Reportedly, the nuns "couldn't keep the bed still," scratches appeared on R's chest, and he began to curse in "a strange language." A later source said it was Aramaic, but a still later "well-documented record" failed to mention "any such language competence" (Allen 2000, 36). The attempted exorcism reportedly ended abruptly when the boy, who had slipped a hand free and worked loose a piece of bedspring, slashed Hughes's arm from the shoulder to the wrist, a wound requiring over a hundred stitches (Allen 2000, 37).

One investigator, however, doubts whether this attack—or even this first exorcism—ever occurred, having searched in vain for corroborative evidence (Opsasnik 2000). In any event the parents considered making a temporary move to St. Louis, where relatives lived. When this possibility was discussed the word "Louis" appeared across R's ribs; when the question arose as to when, "Saturday" was seen plainly on his hip; and when the duration was considered, "3 weeks" appeared on his chest. The possibility that R was producing the markings was dismissed on the grounds that his mother "was keeping him under close supervision," but they might have been done previously and only revealed as appropriate, or he might have produced them as he feigned being "doubled up" and screaming in pain.

According to the diary, "The markings could not have been done by the boy for the added reason that on one occasion there was writing on his back" (Bishop 1949, 247). Such naïve thinking is the reason "poltergeists" are able to thrive. A determined youth, probably even without a wall mirror, could easily have managed such a feat—if it actually occurred. Although the scratched messages proliferated, they never again appeared on a difficult-to-reach portion of the boy's anatomy.

In St. Louis, there were more poltergeist-type effects, whereupon Father Bishop (the diarist) was drawn to the case. Bishop left a bottle of holy water in R's bedroom but later—while the boy claimed to have been dozing—it went sailing across the room. On another occasion R's parents found the way into his room blocked by a fifty-pound bookcase. A stool "fell over." Initially, Bishop and another priest, Father William Bowdern, believed R could have deliberately produced all of the phenomena that had thus far occurred in St. Louis, recognizing that stories of alleged incidents in Maryland were, while interesting, hearsay (Allen 2000, 61–76).

Eventually Bowdern changed his view and was instructed by Archbishop Joseph Ritter to perform an exorcism on the boy. Bowdern was accompanied by Father Bishop and Walter Halloran (mentioned earlier as providing a copy of the diary to author Allen), who was then a Jesuit student. Bowdern began the ritual of exorcism in R's room. Scratches began to appear on the boy's body, including the word "HELL" on his chest "in such a way that R could look down upon his chest and read the letters plainly." A "picture of the devil" also appeared on the boy's leg. "Evidently the exorcism prayers had stirred up the devil," the diary states, because, after a period of sleep R "began sparring" and "punching the pillow with more than ordinary force" (Bishop 1949, 255–257).

Soon Bowdern "believed deep in his soul that he was in combat with Satan" (Allen 2000, 117). R thrashed wildly; he spat in the faces of the priests and even his mother; he contorted and lashed out; he urinated. Reports the diary:

> From 12:00 midnight on, it was necessary to hold R during his fights with the spirit. Two men were necessary to pin him down to the bed. R shouted threats of violence at them, but vulgar language was not used. R spit [*sic*] at his opponents many times. He used a strong arm whenever he could free himself, and his blows were beyond the ordinary strength of the boy [Bishop 1949, 258].

The exorcism continued on and off for days. At times R screamed "in diabolical, high-pitched voice"; he swung his fists, once breaking Halloran's nose; he sat up and sang (for example the "Blue Danube," "Old Rugged Cross," and "Swanee"); he cried; he spat; he cursed his father; he mimed masturbation; he bit his caretakers. On March 18, there seemed a crisis: as if attempting to vomit, R said, "He's going, he's going . . ." and "There he goes." He went limp and seemed back to normal. He said he had had a vision of a figure in a black robe and cowl walking away in a black cloud (Bishop 1949, 257–262).

However, after the priests left R claimed there were odd feelings in his stomach and cried out, "He's coming back! He's coming back!" Soon the tantrums and routine of exorcism continued. R seemed even more violent, hurling vulgarities, and he had spells of Satan-dictated writing and speech, for example: "In 10 days I will give a sign on his chest[;] he will have to have it covered to show my power." R also wrote, "Dead bishop" (Bishop 1949, 262–269). Subsequently on April 1, between disturbances, the youth was baptized in the rectory.

During all this time the markings—the random scratches and words—continued to appear on R's body. When there was talk of his going to school there, the boy grimaced and opened his shirt to reveal the scratched words, "No school" (Allen 2000, 46), a seemingly childish concern for truly diabolic

forces. (The diary mentions only that "No" appeared on the boy's wrists.)

Reportedly, on one occasion R was observed using one of his fingernails (which were quite long) to scratch the words "HELL" and "CHRIST" on his chest. It is unclear whether or not he realized he was being observed at the time. Earlier, the priests reportedly "saw a new scratch slowly moving down his leg" (Allen 2000, 180). This sounds mysterious until we consider that the boy could have made a quick scratch just before the priests looked—which they did because he suddenly "yelped"—and what they observed was merely the aftereffect of the scratch, the skin's developing response to the superficial injury. (I have produced just such an effect on myself experimentally, observed by SI's Ben Radford.)

On April 4, the family decided to return to their Maryland home due to the father's need to work and also to relieve the strain on the Missouri relatives. But after five days R was sent back to St. Louis and admitted to a hospital run by an order of monks. He was put in a security room which had bars on its single window and straps on the bed. During the days the teenager studied the catechism and was taken on outings, but at night the "possession" continued. There were failed attempts to give him Holy Communion, "the devil" at one point saying (according to the diary), that he would not permit it (Bishop 1949, 282).

On April 18, R again announced "He's gone!" This time, he said, he had a vision of "a very beautiful man wearing a white robe and holding a fiery sword." With it the figure (presumably Jesus) drove the devil into a pit. There were no further episodes and Father Bishop (1949, 291) recorded that on August 19, 1951, R and his parents visited the Brothers who had cared for him. "R, now 16, is a fine young man," he wrote. "His father and mother also became Catholic, having received their first Holy Communion on Christmas Day, 1950."

Aftermath

Was R possessed? Or did superstition mask a troubled youth's problems and invite elaborate role-playing? Interestingly, Archbishop Ritter appointed a Jesuit philosophy professor to investigate the matter. According to a reportedly informed source, the investigator concluded that R "was not the victim of diabolical possession" (Allen 2000, 234). Without wishing to make a categorical judgment, Halloran states that R did not exhibit prodigious strength, showing nothing more than what could be summoned by an agitated teenager. As to speaking in Latin, Halloran thought that was nothing more than the boy's having heard repetitious Latin phrases from the exorcising priest. (Or one occasion "the devil reportedly spoke school kids' 'pig Latin'"!)

Nothing that was reliably reported in the case was beyond the abilities of a teenager to produce. The tantrums, "trances," moved furniture, hurled objects, automatic writing, superficial scratches, and other phenomena were just the kinds of things someone of R's age could accomplish, just as others have done before and since. Indeed, the elements of "poltergeist phenomena," "spirit communication," and "demonic possession"—taken both separately and, especially, together, as one progressed to the other—suggest nothing so much as role-playing involving trickery. So does the stereotypical storybook portrayal of "the devil" throughout.

Writer Mark Opsasnik (2000) investigated the case, tracing the family's home to Cottage City, Maryland (not Mount Rainier as once thought), and talked to R's neighbors and childhood friends. The boy had been a very clever trickster, who had pulled pranks to frighten his mother and to fool children in the neighborhood. "There was no possession," Opsasnik told the *Washington Post*. "The kid was just a prankster" (Saulny 2000).

Of course, the fact that the boy wanted to engage in such extreme antics over a period of three months does suggest he was emotionally disturbed. Teenagers typically have problems, and R seemed to have trouble adjusting—to school, his sexual awareness, and other concerns. To an extent, of course, he was challenging authority as part of his self-development, and he was no doubt enjoying the attention. But there is simply no credible evidence to suggest the boy was possessed by demons or evil spirits.

A Catholic scholar, the Rev. Richard McBrien, who formerly chaired Notre Dame's theology department, states that he is "exceedingly skeptical" of all alleged possession cases. He told the *Philadelphia Daily News* (which also interviewed me for a critical look at the subject), "Whenever I see reports of exorcisms, I never believe them." He has concluded that ". . . in olden times, long before there was a discipline known as psychiatry and long before medical advances . . . what caused possession was really forms of mental or physical illness (Adamson 2000). Elsewhere McBrien (1991) has said that the practice of exorcism—and by inference a belief in demon possession—"holds the faith up to ridicule." Let us hope that the enlightened view, rather than the occult one, prevails.

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Reptoids and Martians Invade Silicon Valley

The Bay Area UFO Expo took place at the Doubletree Hotel in San Jose, August 26 and 27, 2000, bringing together some of the top names in UFOlogy. I attended sporting a press badge to represent the SKEPTICAL INQUIRER and no one even looked twice at my hat from Nevada's Area 51 showing an alien quaffing some suds. With approximately 3,000 tickets sold, the conference was a commercial success, although the big money was apparently not made from the registration fees of $25–55. Instead, each speaker conducted a two-hour "workshop" following his or her lecture, with tickets $20–25 each, to which my press pass unfortunately did not admit me, so I missed out on some of the wildest-of-the-wild stuff. However, what I did learn from each speaker's "free" 45 minute lecture provided more than enough excitement for one weekend.

David Jacobs, the noted UFO abductionist, painted a scary scenario of clandestine activity by one or more alien races, whose agenda is secret. Fortunately, we have been able to penetrate many of their secrets owing to the recollections of abductees, despite the aliens' best efforts at making them forget. Jacobs is greatly obsessed by the "tables" in the saucers, where the examinations of abductees supposedly takes place. They are obviously built to accommodate humans, not the little guys who pilot the saucers. And there are lots of tables. Indeed, there are rooms with nothing but tables. Virtually everything that is inside the UFOs seems to be constructed for the sole purpose of abducting humans, an agenda the ETs appear to be pursuing with single-minded ferocity.

The insectoid creatures, says Jacobs, are clearly in charge. Some people describe reptilians, although it is possible that this may be just another description of the praying mantis insectoid. (Which is understandable, I think, since insects and reptiles are easily confused.)

Angela Browne Miller is a psychotherapist who has transmitted work into this dimension from Albert Einstein and Karl Marx. She is encouraging people to get in touch with their brain waves, urging us to "monitor your brain waves for foreign consciousnesses." We should be "highly conscious" (although not paranoid) when we travel interdimensionally, so we can properly map out the territory.

She represents a new movement calling itself Synaptic Liberation, which will lead society to Utopia. She plans to transform it into a political party, and one of their principal demands will be for completely unrestricted interdimensional travel.

James Gilliland is in "telepathic contact" with aliens who are said to be "spiritually advanced," although unlike many others he has only been on board a ship only once. He has a ranch near Mt. Adams, Washington, on which he operates the Self Mastery Earth Institute. He claims the ability to "vector in" UFOs for his visitors to see. They appear very much like "balls of light," except that they are interdimensional. He calls this "ECETI," for "Enlightened Contact with Extraterrestrial Intelligence." A "higher council" seems to be in charge among visiting UFOnauts, which is somehow tied in with the Ascended Masters. The question of how these splendid aliens can be reconciled with the horrific scenario painted by David Jacobs did not seem to trouble anyone.

David Shoemaker set up a vendor's table in the hallway with a big sign reading "UFO Crash Debris." He claims to have debris from two different crashes. One crashed in Missouri three days after the famous 1947 Roswell incident. The other was picked up at the "hot landing site" in New Mexico in 1998. He claims to have conducted extensive scientific testing that proves that these samples have anomalous isotope ratios, and impossible combinations of rare earths. You can judge his claims for yourself at www.crashdebris.com.

Shoemaker additionally claims shamanic powers, as well as being an "exorcist" and an "intuitive healer." He also claims to be able to "shape-shift,"

Robert Sheaffer's World Wide Web page for UFOs and other skeptical subjects is at www.debunker.com.

although unfortunately not in public. He says that while at last year's UFO conference, he healed several people with fatal diseases. He claims that most of the UFO movement is actually run by the government, bent on disinformation. He accused one prominent UFOlogist of trying to poison him. "Dark agents" have been sent against him, which he was able to kill using his shamanistic powers, and so the conspirators have stopped attacking him.

The Mexican UFOlogist Jaime Mausson showed a photo allegedly taken by a Mexican TV viewer of coverage of Neil Armstrong's moon walk in 1969. Supposedly it shows a "life form" on the Moon, although he conceded that "we have not been able to see them on the original tapes." The photo is labeled, "1969 El Hombre de la Luna." It looks like a blurry image of a clay figure, against an indistinct background looking decidedly non-lunar.

At Metepec, Mexico, a UFO landed in 1994, and out came a luminous extraterrestrial. He showed us a drawing of something looking like an upright slug, with an ET head affixed, but unfortunately to see the video you'd have to attend the workshop. Apparently the ETs in Mexico have recently become luminous, and such creatures are more frequently being seen, especially in the mountainous deserts of Baja California Norte. Maussan says he has seen these glowing beings himself once. Unfortunately, when he tried to take photos and videos of them, he could not, although he didn't explain why. All he can do is swear to us he's telling the truth. He expects that UFOs are going to land openly very soon.

Anna Hayes displayed a detailed physiogonomy of various extraterrestrial faces. She is in telepathic contact with the Emerald Order, one of the Guardian races, who fortunately are protecting us from the Intruder races. She explained about the different forms of matter: pre-matter, etheric matter, etc., speaking with enormous confidence about the most absurd twaddle you've ever heard.

Richard Hoagland (see "The Face Behind the Face on Mars" by Gary Posner, SI November/December 2000) drew by far the largest crowd, and the 350 people who paid for his "workshop" makes him far and away the biggest moneymaker. He wasted twenty minutes trying to set up his computer to present a slide show to us, using Adobe Photoshop 3.0. Most people use that program for retouching photos, not for simply displaying them. He claimed that it's the only photo program he knows how to use. Some of the "NASA photos" he showed contained copyright notices by individuals, indicating that they must have been "improved" from their original state.

The surface of Mars is, he says, filled with artificial stuff that was covered up by a cataclysm that occurred there, then some of it was gradually uncovered by erosion. He claimed to find "glass tunnels" and "pipelines" on Mars. A "Martian Flying Saucer" is perched precariously on the edge of a canyon, its windows and engines visible. There is increasing evidence that the global civilization that once covered Mars was us.

The X-Files, says he, is an "exposé" of the power blocks that are trying to keep information from leaking out. Hoagland said that he ought to call today's workshop, "The Real Reason Al Gore Picked Joe Lieberman." He repeated that same statement twice afterward, and it seemed to me that an anti-Semitic implication was intended.

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Michael Tsarion is an astrologer, numerologist, UFOlogist, and Tarot reader. He explained about how both the Atlanteans and the extraterrestrials were involved in ancient Celtic Ireland. The stories of J.R.R. Tolkien and C.S. Lewis are not fictional, according to Tsarion: they describe the society of pre-Diluvian Ireland.

Lawyer Peter Gersten of Citizens Against UFO Secrecy (www.caus.org) said that he is receiving channeled information from another intelligence, and invited his listeners to subscribe to his daily e-mail about it. Most of us in this room, he said, are probably in contact with another form of intelligence. He thinks that this intelligence is terrestrial, and that is why it is being kept secret. According to Gersten, the Roswell event of 1947, whatever it may have been, seems to have been a sort of "premature downloading" of technology from this hidden intelligence. He urged his listeners to look at www.padn.org—his "Planetary Appeal Distribution Network." It's a multi-level marketing e-mail scheme. You send $10 to the name at the top of the list, remove it, then add your own to the bottom, all the while helping to promote the end of the government cover-up. Hopefully Gersten, as a lawyer, has carefully investigated whether or not this scheme violates any of the federal or state statutes against chain letters.

Gersten told of a "credible observer," Gary Lowery, who works as a fire inspector. He and his family have ongoing, more or less weekly contacts with beings that come into their home, entering through his closet. Gersten's workshop would showcase Gary and his family, talking about the monster in their closet (the obvious reference to the Sesame Street book of that title was left unsaid). Reportedly, during the workshop Gary showed a video of his closet-monsters, who as it turns out are reptoids. He also allegedly has their footprints, preserved by putting aluminum foil under a towel in the closet through which they had been entering the room. In fact, Gary claims to have found what may be the claw of one of these creatures, which apparently fell off in the towel.

After the conference, a brouhaha erupted when another UFOlogist reportedly tried to muscle in on Gersten's deal with Lowrey for the exclusive marketing rights to his reptoid tale. Promising lucrative book and movie revenues, he persuaded Lowery to cease his appearances on the "Coast to Coast AM," as arranged by Gersten. You can read all about the great Reptoid dispute at www.caus.org/mc092300.htm.

"Flying Saucer Physicist" Stanton T. Friedman said he would speak on "Deceit in UFOlogy" from government agencies, and from debunkers such as Phil Klass. However, what he ended up mostly speaking about were several pro-UFOlogists who have claimed bogus degrees, or otherwise significantly misrepresented their backgrounds. Unable to charge any UFO skeptics with doing this, he contented himself with pointing out statements by leading skeptics that he construed as inaccurate. If I were to do this with the statements of Friedman and his colleagues, I could talk for days.

Dr. Roger Leir is a podiatrist who performs surgeries to extract supposedly alien implants. The surgical team is essentially composed of MUFON members, with the first surgeries in 1995 discovering a T-shaped object in a membrane that allegedly couldn't be cut. The lab report showed that there were a large number of special nerve cells associated with it. What, he asked, are nerve cells doing connected to a foreign object?

The National Institute for Discovery Science in Las Vegas, funded by Robert Bigelow (www.nidsci.org), agreed to pay for testing these implants at Los Alamos and at New Mexico Tech. One implant was described as "amorphous metal," but it was highly metallic. The results were compared to "meteorites." Why the aliens might implant meteorites in someone's toes was not explained.

Robert O. Dean rambled on about many things, making little sense. He railed against the National Security Act, the Federal Reserve, FDR's New Deal, and the UK-USA Security Pact.

Apparently a 26,000-year cycle is about to end, and humanity is evolving into a new species, emerging like a butterfly. The calendar will run out on December 31, 2012. There is ongoing, major activity on the Moon. When we went to the Moon, we were told to get off and stay off, which is what we did. The tenth planet has been discovered, in a 3,600 year orbit, and it will be clearly visible in just two years.

Stanton T. Friedman ended up mostly speaking about several pro-UFOlogists who have claimed bogus degrees, or otherwise significantly misrepresented their backgrounds.

There appears to be something like a "Galactic Federation," and Dean suggests that our quarantine, the embargo of Earth, has just been lifted. We will soon be making contact with beings that are interstellar, intergalactic, and interdimensional. The "initiation of the human race" is taking place.

Clyde Lewis (www.clydelewis.com) has done acting in independent films and screenwriting. He does a talk show called Ground Zero, heard over the Internet.

He claims that the mass-media marginalize UFOlogists, taking their comments out of context. The future of UFOlogy is clouded, with the "debunkers" are getting far more press than the believers(!). But 80 percent of the public believe that ETs have visited.

He suggests that aliens have bases on Earth. He doesn't want any more "disclosure," because it will just produce more lies. Aliens and the military are working together. It's alien-military activity, and some aliens are hostile.

Norman Bergrun, author of *The Ringmakers of Saturn*, says that much of Saturn's rings are actually a form a space-pollution, the emissions from Electromagnetic Vehicles (EMVs) that are cruising around there. He claims that there is ongoing activity in Saturn's rings, presumably mining. These EMVs have turned up on the Moon as well. NASA knows all about this, but of course is covering it up (see www.ringmakersofsaturn.com).

Jim Dilletoso announced his intention to show 199 of the best UFO photos and videos from his collection. He admitted to having used bogus credentials to get into a photo lab to do some of his UFO photo analysis, saying "I sometimes regret this today." By his analysis, some of the Swiss contactee Billy Meier's UFO photos show large and presumably genuine objects, while others look like hoaxes.

Different types of spacecraft come in several different ratios. You can predict where UFOs will be seen next based on the ratios of the UFOs we see now. Cylinders are followed by orbs. It is the ETs' decision to keep UFOs hidden, not the government's. He predicted an increase in UFO activity, and especially abductions, in Arizona in the next one to two months

Budd Hopkins, another famous abductionist, talked about how abduction experiences affect young children. In some cases, a newborn baby has been abducted from the hospital before its mother even took it home. In his workshop, he will discuss the signs by which childhood abductions can be recognized. If babies show fear of its mother wearing dark glasses, or fear of being put into the crib at night, it suggests that the child is being abducted by aliens. Young abductees in school tend to be loners, Hopkins says, and to feel inadequate, which helpfully gives lonely and insecure children something else to worry about. Some alien implants, once discovered, will disappear. This happens all the time. As for Barney and Betty Hill, Hopkins suggests that they had probably been picked up by aliens many times before their famous abduction.

The Bay Area UFO Expo was so successful that there's no doubt they'll hold another one next summer. But if you can't wait that long, in May you can attend Conspiracycon—unless the Men In Black get you first. □

Medicine Wars

Will Alternative and Mainstream Medicine Ever Be Friends?

In the wake of dozens of new and complementary medicines flooding both the marketplace and some hospitals, which path will medicine take?

BARRY F. SEIDMAN

Last March, under the headline "Soybeans Hit Main Street," an article in *The Scientist* hailed the arrival of the soy product tofu, including the precedent-setting (for alternative medicines at least) approval by the Food and Drug Administration, after reviewing forty-one studies, of a soy dosage of 25 grams a day to help prevent heart disease. The compounds in soy responsible for this good news, the article reported, are isoflavones (a subclass of flavonoids) which some research suggests may also help protect against breast cancers, among others.

The very next month, a study in the *Journal of the American College of Nutrition* found that people who ate tofu more than three times a week showed more signs of impaired

mental function later in life than those who rarely ate the soy product. The suspected culprit: the high intake of isoflavones in tofu.

Consumers could be pardoned for being baffled. Is tofu the next "wonder food," or will it shrink your brain in a way your psychologist never meant to? The Jekyll and Hyde story of tofu illustrates the tricky status of alternative (as well as complementary) medicines, whose remedies almost by definition have not been subject to the rigorous research and testing expected of mainstream medicine.

The term "alternative" usually refers to medicines meant to *take the place of* traditional medicine, while "complementary" indicates treatments used *in addition to* conventional medicine. Complementary medicine is also sometimes called "integrative medicine," which is supposed to unite the best of both worlds, marrying scientifically proven chemotherapy, for example, with herbal formulas supported by folk wisdom.

One reason alternative medicines (AM) and complementary medicines (CM) have not been as rigorously tested as traditional medicines may be that they do not attract the funding required for methodical scientific validation because typically they are not patentable. Another possible reason is that it is not in the interest of many AM promoters to undertake scientific studies of these remedies because they make a good deal of money selling them—untested and unregulated—over the counter as food supplements.

In part to quench the growing popular thirst for acceptance of alternative medicine, in 1998 the National Institutes of Health (NIH) created the National Center for Complementary and Alternative Medicine (NCCAM), which was charged with sorting the wheat from the chaff among the myriad unproven supplements and therapies by rigorous research and testing. To some, this move meant that the scientific standards of medicine would be upheld. But many others, including promoters of alternative medicine and their followers, took it as a legitimization of the whole field.

But how much credence is the American public putting in these various dietary supplements, herbs,

Brad Marshall

and alternative practices? That depends on whom you ask.

"From 1990 to 1997, the use of herbal remedies increased 380 percent," reports Carol L. Norred, C.R.N.A., in a study published in the February 2000 *Journal of the American Association of Nurse Anesthetists.* She adds that data from 1998 indicate that about 37 percent of Americans used herbs during the previous year, spending more than $3.87 billion for these food supplements.

New Age gurus too often promote alternative methods as safer than "invasive, side-effect-ridden" therapies such as chemotherapy and bone marrow transplants—usually by referring to them as "ancient" (as though longevity implied validity), and "natural."

James N. Dillard, M.D., director of the Columbia College of Physicians and Surgeons, agrees with Norred's data and is indeed not surprised that so many people are attracted to alternative medicines. During a long career, which includes experience in both traditional and nontraditional medicine, he has found that many patients are not satisfied with—and in fact are quite distrustful of—conventional medicine and its practitioners, who are often referred to as "money-hungry" and "cold."

Additionally, Dillard, author of *Alternative Medicine for Dummies*, notes that an estimated 60 million Americans have no health insurance and can't afford conventional medical care with its costly prescription drugs and procedures.

To that background add the growing number of health-food products in stores and on the Internet and, according to Dillard, you'll see the reason why "one half to one third of Americans are using complementary medicines."

Other experts, however, believe the number of Americans who are being co-opted by the alternative medicine world has been greatly exaggerated. They feel that many nontraditional practitioners have laid the psychological groundwork that has led the general public to form the idea that America is becoming "an alternative medicine country."

For example, some skeptical practitioners point out that even the "serious" peer-reviewed medical journals sometimes err, fail to reveal the financial self-interest of researchers, and produce articles based more on bias than on solid research.

A "landmark" article in *The New England Journal of Medicine* in the winter of 1993 by David Eisenberg and colleagues contended that 34 percent of Americans had sought unconventional treatment during any given year, often from AM practitioners rather than their regular doctors.

This study was later evaluated by William Jarvis, professor of public health and preventative medicine at Loma Linda University in California, and contributing editor for the new peer-reviewed journal *The Scientific Review of Alternative Medicine.* Jarvis's survey found the percentage was much lower—around 10 percent, based on unconventional medicines used by patients seeking care from traditional practitioners.

One of Jarvis's colleagues, Wallace Sampson, M.D., formerly the associate chief of hematology and medical oncology at the Santa Clara Valley Medical Center in California, and a clinical professor of medicine at Stanford University School of Medicine, explains, "They [Eisenberg et al.] inflated or biased the study by including self-help groups, group psychotherapy, weight-loss clinics, ordinary prayer, and other procedures that are really just adjuncts to standard scientific medical care, and neither are alternative or 'complementary' methods. By creating a false impression of increased demand, the 'alt' system has created a self fulfilling prophecy."

Adding to *SRAM*'s findings in 1999, the *Journal of the American Medical Association* (*JAMA*) published a study headed up by Benjamin G. Druss, M.D., M.P.H., of the departments of psychiatry and public health at Yale University, that found what Sampson says is a far more realistic assessment of AM usage. Druss's report is based on statistics provided by the 1997 Medical Expenditure Panel Survey (MEPS), which 24,676 people responded to. It found that in 1996 about 6.5 percent of Americans used both conventional and unconventional medical services. Only 1.8 percent used only unconventional services.

"Patients generally report using such therapies to augment their medical care rather than as a result of dissatisfaction with mainstream medicine," according to Druss.

"Nonetheless, there remains a perception among clinicians and in the popular press that unconventional treatments represent a rejection of, and challenge to, the mainstream medical system."

Dillard, however, finds no connection between the Eisenberg study and Druss's. "What Druss was interested in, in his study, was finding out if people use nontraditional medicines and standard medicine at the same time, not how many people in the country actually use alternative therapies," Dillard said. "Druss doesn't, for example, include how many people self-use these medicines at the [drugstore or health-food store] counter."

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Dillard points out that Eisenberg looked at all the various alternative methods, from "garbage" that can't work to many herbs that have been found to be useful. Though Dillard himself believes that most alternative and complementary medicines are useless, he feels that certain herbs, acupuncture, and chiropractic ought to be included for the treatment of many patients' ailments because they have at least some scientific evidence backing up their efficacy.

One consistent finding regarding AM usage among general practitioners is that the more serious the disease, the more skeptical the people become. For instance, based on a number of research papers, including an unpublished survey by Shapiro and Associates for the American Cancer Society, Jarvis believes that the percentage of cancer patients who seek alternative treatments is smaller than that among the general public.

The Shapiro survey polled 36,000 homes and located 5,047 cancer patients living or deceased from 1987 and 1988. Shapiro considers "standard therapy" to include surgery, radiation, and chemotherapy. He found that 7 percent of the living patients and 14 percent of the deceased ones were reported to have used none of these treatments. Four percent of patients said they had no treatment whatsoever. "The difference between the 'no treatment' respondents and those who did not have the three methods mentioned are the users of alternative cancer treatments," says Jarvis. In other words, about 4 percent of patients.

The Shapiro survey also found that 80 percent of alternative or complementary therapy users continued to seek the service of their mainstream doctors while using the unproven methods, while 35 percent of users did not tell their physicians they were using these methods. And 2 percent used these methods even over the objection of their doctors.

The Traditional Point of View

The idea that alternative medicine has only recently exploded onto the scene is more media hype than fact, according to Sampson, who has been researching this sometimes-exotic world for more than twenty-five years. "A propaganda number is being run on the public, and the press, for the most part, is falling for it," he says. The important question, he feels, is how both doctors and patients deal with the plenitude of information and misinformation being circulated.

"I performed an unpublished survey of 100 successive cancer patients in 1976 and found 60 percent had been taking some sort of unproved method. [It] got me to asking all cancer patients what they took besides what I gave them, and to discuss it freely. I also taught all [medical] residents and students to ask the same," remembers Sampson.

William Jarvis, who began studying quackery around the same time as Sampson, has dedicated his professional life to helping consumers and patients better educate themselves about the pitfalls in unconventional medicines. He has written a soon-to-be published analysis of this mission, to educate physicians on how to help patients deal with questionable treatments, from diagnosis to maintenance. Jarvis also includes ideas on how doctors can better understand patient behaviors and help patients decipher scientific "technobabble." Perhaps most important, he includes a section explaining why so many people believe in unproven therapies in the first place.

The extensive research Jarvis conducted to write his paper led him to develop a hypothesis that separates alternative and complementary medicine users into two categories: pragmatists and ideologists.

"Pragmatists are willing to try almost anything they hear about that sounds plausible. They expect to be able to tell whether something is helping or not in a relatively short period of time." He adds that pragmatists pay little attention to scientific reports on this or that therapy, but pay lots of attention to testimonial and anecdotal reports, which are difficult to check for veracity and may be anomalies.

"Health beliefs of various sorts constitute a kind of hygienic religion for ideologists. These people will stick with a program even when it is apparent to people around them that they are not doing any good."

"Ideologists are different," says Jarvis. "Health beliefs of various sorts constitute a kind of hygienic religion for ideologists. These people will stick with a program even when it is apparent to people around them that they are not doing any good. [These AM practitioners can convince ideologists] that cancer is only an illusion; [that if they] stop believing the cancer is there, it will go away. I know of many who have died trying to prove their ideologies were true. Even as they went downhill, they still believed that they had done the right thing."

Barrie Cassileth, Ph.D., of the Memorial Sloan-Kettering Cancer Center in New York City feels that one of the greatest obstacles scientists have to hurdle in investigating alternative and complementary medicine are the providers of these medicines themselves.

"The people who promote this stuff," a frustrated Cassileth argues, "make the public paranoid about traditional medicine. They say things like 'scientists don't want to cure cancer lest they'd be out of a job'; this is a ludicrous notion."

Both Cassileth and Jarvis feel that New Age gurus too often promote alternative methods as safer than "invasive, side-effect-ridden" therapies such as chemotherapy and bone marrow transplants—usually by referring to them as "ancient" (as though longevity implied validity), and "natural."

But because people have used a method for hundreds or thousands of years doesn't necessarily mean it works from a physiological standpoint, just that it might have had a powerful belief system behind it. If for generations people had been taking a remedy, and everyone, from grandmothers to medicine men, "knew" that is was good for them, then it was, for that reason, more likely in fact to help.

Herbs can prolong blood's coagulation time, leading to severe bleeding in surgery patients. Norred found that 27 percent of patients who ingest herbs before surgery encounter this complication.

Also, "natural" doesn't exempt patients from danger or toxicity. After all, poison ivy and snake venom are "natural." James Dillard said, in a previous interview, that "many folks think that they can treat themselves with herbs, because herbal remedies 'are not really medicines.' This is incorrect . . . they [these herbs] are not the same as just eating a salad or vegetable."

One dangerous result of this kind of thinking arises when people take these medicines to assist them through serious medical challenges like surgery.

Norred, after surveying 500 patients, found that 255 of them, or 51 percent, took vitamins, herbs, dietary supplements, or homeopathic medicines just two weeks before surgery. Of these patients, 122 took 50 different herbs with other alternative medicines. Some of these herbs included garlic, cranberry, echinacea, and ginseng. One danger of such practices is that these herbs can prolong blood's coagulation time, leading to severe bleeding in surgery patients. She found that 27 percent of patients who ingest herbs before surgery encounter this complication.

The Alternative Point of View

There are some alternative-point-of-view complementary medicine promoters who claim they are indeed being responsible.

Durk Pearson and Sandy Shaw are a team of scientists who have worked in the field of nutrition and complementary medicine for more than thirty years. They currently operate a company called Life Services, Inc., and conduct anti-aging and brain biochemistry research.

Careful to separate themselves from the average "miracle workers," Pearson points out that he has earned degrees from the Massachusetts Institute of Technology in physics, biology, and psychology, while Shaw graduated with a degree in biochemistry from the University of California at Los Angeles.

The team does not feel the average person today is as ignorant toward shams and charlatans as they might have been just ten years ago. Instead, they feel that patients today, especially cancer patients, educate themselves well enough regarding their condition. They feel that today, particularly with the advent of the Internet, many people can cross-reference myriad databases, quickly determining the differences between quackery and peer-reviewed studies.

Pearson and Shaw's gripe instead is with the Federal Drug Administration, which they see as a self-serving government agency with the power and money to dictate what kind of treatment will and will not be labeled appropriate or even seriously researched for approval.

In one clash with the powers that be, Pearson and Shaw came up on top. On January 15, 1999, the United States District Court for the District of Columbia under Circuit Judge Silberman decided that the FDA had violated Pearson and Shaw's constitutional rights to sell their dietary supplements without governmental approval. The court voted unanimously in their favor.

A statement added to the decision was tacked onto the official decision by Silberman, which assured that the decision would be published, indicating false motives on the part of the government. The government argued that the FDA was concerned with consumers' dietary health and safety, when in fact "The government had never contended that appellants' (Pearson and Shaw) dietary supplements, as opposed to other dietary supplements not at issue in this litigation, threaten consumers' health and safety," said Silberman.

Frustrated by what Pearson sees as the FDA's narrowness of vision, he notes, "It was once the policy of the FDA to say that the agency ought to be the 'sole authority' for determining what is good and what is bad medicine. Some still believe this is so; I think this is utterly laughable. . . . The FDA doesn't have a monopoly on truth," concluded Shaw.

When asked their opinions whether or not the NCCAM is helping to widen the playing field for potentially beneficial complementary medicines, Pearson said, "I think they [NCCAM] can be doing a better job in choosing what to look at. Some of the stuff they are studying doesn't have any more medical relevance than leeches! There are many, many other medicines much more worth studying like calcium and certain herbs."

Paul Bergner, editor of *Medical Herbalism*, an herb information Web site, makes herbs his livelihood. He argues that herbal medicine, especially Chinese tonic herbs, may improve the survival rates of cancer patients undergoing conventional treatments. "As a non-M.D. recommending herbal medicine to cancer patients, I do not hesitate to inform patients of the possible benefits. However, interactions between herbal medicines and chemotherapy are poorly understood. Therefore, I recommend that they fully disclose to their oncologist the regime that they are practicing."

So, in general, are doctors alerting their patients to the

potential dangers of unproven therapies?

One clue that this may not always be the case is that often patients who do ask their doctor about this herb or that alternative therapy get blank stares—an acknowledgment, according to Dillard, that the doctors "don't have any idea what patients are talking about." Conversely, some physicians adopt an adversarial stance at the very mention of alternative medicines, even toward the few remedies that actually show some evidence of benefit.

AM and the Doctor/Patient Relationship

Many patients never confront their doctors about their use of alternative medicines. According to an as-yet unpublished case study, Norred says that questionnaires have indicated that "About 70 percent of individuals who use alternative medicines do not discuss it with their doctors but self-diagnose and self-treat their illnesses. This lack of communication could compromise patients' safety if the use of unconventional medicines interferes with other health problems or medical treatments."

James M. Metz, M.D., assistant professor of radiation oncology at the University of Pennsylvania Cancer Center, in a study he presented May 23, 2000, at the 36th meeting of the American Cancer Society for Clinical Oncology, found that 40 percent of cancer patients used unproven therapies and did not disclose this information to their doctors until specifically prompted to.

Within a group of 79 patients who admitted using such therapies, 40 percent reported using mega-doses of vitamins such as C and E. Metz pointed out that these vitamins are antioxidants and could interfere with or inhibit radiation therapy. Metz told Ascribe: The Public Interest Newswire, "Patients should understand that just because a product is marketed as 'natural,' that doesn't make it completely safe. Many of our chemotherapy drugs are from natural sources, but the ingredients are known to have certain toxic effects." While researchers are asking these important questions of patients, they are largely neglecting to ask physicians the same questions.

John Renner, M.D., chief of medicine for HealthScout.com and the National Council for Reliable Health Information, and now retired from private practice, reflects on his relationship with the many patients he saw throughout his career. "I was a patient advocate. I even had a medical library in my office. I was very honest with my patients, and they seemed to return this honesty. I don't think many [took alternative medicines] behind my back."

Physician's assistant Helder Rebelo, P.A.C., of High Mountain Health in Wayne, New Jersey, agrees that most patients are honest with their doctors. He makes it clear to other physicians as well as patients that he'd never advise a patient, especially one with a condition as serious as cancer, to choose an alternative treatment, replacing traditional methods. "I can't approve of treating cancer, for instance, with such medicines as an alternative treatment unless, perhaps, if the patient has gone through chemotherapy and has had masses removed, but the cancer is very metastatic—basically, if there is little else that can be done."

For complementary methods like chiropractic, as well as some herbs like echinacea, Rebelo says that as long as they do not interfere with the current medications and treatment the patient is taking, he has no problem with patients trying them out. He found, though, that with many herbs, patients usually come to him after the fact, telling him, 'Hey, I tried this and it didn't work.'

Wallace Sampson says he never had problems with people withholding this kind of information. In fact, many people would bring pamphlets or books to his office and ask him what he thought. "Although I usually didn't agree with what the books said, I sat with them and discussed their options. [Are] patients keeping their involvement secret from their doctors? I'd say they don't. They just don't think it is very important."

About 70 percent of individuals who use alternative medicines do not discuss it with their doctors but self-diagnose and self-treat their illnesses.

Sampson does admit, however, that there are some patients who will never be happy with what he and most physicians might say about alternative or complementary medicines. "[Clinicians] are usually not going to prescribe these methods because most of the claims of 'success' are false."

Yet the attraction of some unproven treatments—the sense of empowerment they give users and their relative affordability (even though some such treatments can be surprisingly expensive)—can be very powerful.

Janet Zazha, a consumer of complementary products, sees great potential in their ability to both keep her healthy and prevent future ailments. She currently takes calcium glucorate (CdG), a "natural" chemical found in apples, grapefruits and broccoli, to prevent breast cancer, and BiosLife 2 (BL2), a dietary fiber supplement, to lower blood cholesterol. Her family doctor is not only aware that Zazha is taking CdG, but she say proudly, "after I told him about it, he is now taking BiosLife himself to lower his cholesterol, as he wants to stop taking Lipitor [a prescription cholesterol-lowing drug]."

"I would like to see a study where BiosLife 2 was measured against oatmeal," comments Stephen Barrett, M.D. Barrett has researched BiosLife and the company distributing it, Rexall, extensively. He feels that as far as controlling cholesterol, the product might have some positive effect, but that no one seems to want to submit a study to any peer-reviewed

journals, and this leaves him suspicious.

"BiosLife is expensive. I'd really like to know if there is any data showing that it is more effective or even cost-effective than using oatmeal. Also, two people whose doctors prescribed BiosLife for their high cholesterol levels have recently consulted me. Neither of them was being optimally managed."

Indeed, Barrett says he found that these patients were never even asked to have regular blood work done to determine if BiosLife was working as advertised!

Many complementary medicine practitioners often take any one herb that might be helpful for preventing some ailment such as cancer, and then add to it lots of useless herbs and vitamins.

Barrett operates a health-based watchdog Web site at www.quackwatch.com, and there posts extensive articles and pertinent information about alternative cancer treatments and other such information. Among the cancer treatments he analyzes are CanCell (Cantron), Antineoplastons, Cell Specific Cancer Treatment, Essiac, Immune-augmentative Therapy, the Kelly/Gonzalez Metabolic Therapy, shark cartilage, and vitamin C. He notes that the American Cancer Society refers to these "treatments" as "lifestyle practices, clinical tests of therapeutic modalities that are promoted for general use for the prevention, diagnosis, or treatment of cancer and which are, on the bases of careful review by scientists and/or clinician, deemed to have no reasonable evidence of value."

"These products need to be studied one by one; using an umbrella term like 'alternative medicine' is meaningless and non-measurable," says Barrett. He cautions that many CM practitioners often take any one particular herb that might be helpful for preventing some ailment such as cancer, and then add to it lots of useless herbs and vitamins. When the patient doesn't get cancer, he or she credits the useless herbs along with the one useful one. "Personally," adds Barrett, "I feel that the complementary medicine practitioners are dishonest muddleheads offering a low quality of medical treatment."

Consilience?

Confusion over the use of alternative medicines seems to run deeper than sensational claims and public frustration with traditional medicine. It might be necessary to compile a better, more descriptive language that can clearly explain what is exactly meant by alternative and complementary therapies. Are they mostly vitamin and mineral supplements to be taken—pun intended—with a grain of salt? Or are they indeed the new frontier for twenty-first-century medicine? AM and CM practitioners claim that traditional medicine is short-handing them and not seriously studying the effects of "natural medicines." For most scientists however, the proof is in the pudding.

Denis R. Miller, M.D., the global clinical manager of Aventis Pharmaceuticals in Bridgewater, New Jersey, and clinical professor of pediatrics at the Robert Wood Johnson Medical School in New Brunswick, New Jersey, feels that "Everything people can imagine taking as treatments for anything is testable. Those who argue against this are not being honest."

Miller makes a point to say that he is very much for any treatment that increases one's lifespan and improves the quality of life of any patients; so much so that he is willing to test any alternative medicine for its efficacy. He adds, "Paranoia has no place whatsoever in science."

Nathaniel Katz, M.D., co-coordinator of a multidisciplinary commentary task force at Dana Farber Cancer Institute in Boston, is part of a rare program where the goal is to combine traditional procedures such as nerve blocks with alternative therapies such as guided imagery, yoga, and Therapeutic Touch (TT).

As a response to any complaints from doctors not willing to place patients into the care of "unproven therapies," Katz argues that "every decade has its standard medicine and its non-orthodox ones. Some medicines from both groups, in time, can, and do, fall out of favor." He admits though, "I think people become interested in the non-orthodox medicine simply because they are non-orthodox."

Katz is a strong advocate of the usefulness of the placebo effect, one of the ways he deems some non-orthodox medicines "work." "There are two main ways placebos operate. One is the psychological way, where a patient simply believes that the nurse standing over them applying soothing touches, or the mind-clearing effect of yoga medication can produce a psychological effect, will do so and can allow the patient to feel better thereby helping their body to heal itself. The other is that some of these placebos might actually cause some biochemical effect in the brain that helps patients get better." Katz, arguing against the skeptical notion that placebos can only affect someone for a limited time, says he's known many patients who were still healthy years after they stopped taking a particular placebo even though the conditions were not known to get better on their own.

In disagreement with what Barrett calls Katz's "anecdotal evidence," the Quackwatch president points to very dubious information regarding one of Katz's treatments. He offers for evidence a study of TT designed by Laura Rosa, R.N. and her daughter Emily Rosa published in the April 1, 1998, *Journal of the American Medical Association* (*JAMA*).

"They tested twenty-one TT practitioners to determine whether they could detect one of her hands near theirs. Each subject was tested ten to twenty times. During the tests, the practitioners rested their forearms and hands, palms up, on a flat surface, approximately 10 to 12 inches apart. Emily then hovered her hand, palm down, a few inches above one of the subject's palms. A cardboard screen was used to prevent the subjects from seeing which hand was selected. The practitioners correctly located Emily's hand 122 (44%) of 280 trials, which is no better than would be expected by chance and guessing."

Barrett notes that Dr. George Lundberg, [then] editor of *JAMA*, himself believes that TT practitioners now have an ethical duty to disclose the results of this study to potential patients and that the third party payers should question whether they should pay for TT procedures. Lundberg also believes that patients should "refuse to pay for this procedure until and/or unless additional honest experimentation demonstrates and actual effect."

Katz indicated that patients at Dana Farber do not directly pay for the alternative therapies the new program offers, but admits that the practitioners are being paid for their services. How this eventually affects the overall Dana Farber patient billing procedures has not been disclosed to this reporter.

Barry Beyerstein, Ph.D., is concerned about using such unproven therapies. He says, "At least ten kinds of errors and biases can convince intelligent, honest people that cures have been achieved when indeed they have not!" In the September/October 1997 SKEPTICAL INQUIRER, Beyerstein, a psychologist at the Brain Behavior Laboratory at Simon Fraser University in British Columbia, Canada, noted that many complementary medicines stay around so long that they wind up forcing respect from hospitals and many doctors, usually due to all the so-called "satisfied testimonials" people offer to their worth.

"Essentially, they [the patients] are saying, 'I tried it and I got better, so it must be effective.' But even when symptoms do improve following a treatment, this, by itself, cannot prove that the therapy was responsible."

Among Beyerstein's "ten errors and biases" are: 1) the disease may have run its natural course; 2) Many diseases are cyclical: "That is, some diseases like arthritis and multiple sclerosis have their ups and downs"; 3) Spontaneous remissions: "Even with cancers that are nearly always fatal, tumors occasional disappear without further treatments"; 4) Symptomatic relief versus cure; and 5) the placebo effect.

"Through a combination of suggestion, belief, expectancy, cognitive reinterpretation, and the diversion of attention, patients given biologically useless treatments can often experience some measurable relief," said Beyerstein.

One kind of relief for patients with pain, for instance, can come from the placebo's effect to trick the brain into releasing endorphins—a natural morphine-like drug—into the body. Most skeptics do not wish to discredit the placebo effect for palliative reasons; one day science, they feel, might be able to "bottle the effect" and help patients use their brain's natural healing abilities to aid toward curing many diseases. However, they feel that for now, many of the nonorthodox therapies need to be tested via repeated "blinded" clinical trials. "Only if the improvements observed in the active treatment group exceed those in the control and placebo groups by a statistically significant amount can any therapy claim legitimacy," adds Beyerstein.

"Through a combination of suggestion, belief, expectancy, cognitive reinterpretation, and the diversion of attention, patients given biologically useless treatments can often experience some measurable relief."

Perhaps the key to a harmonious coexistence of conventional and alternative medicines is a kind of divorce. Scientists, who are more qualified than any New Age practitioners or lay person to determine the value of unproven treatments, need to conduct research that will once and for all divorce the sensational claims of these treatments from any actual therapeutic qualities they might have. Then they have to be taken, one by one, into the laboratory. One thing is certain, however—alternative medicines can no longer be ignored.

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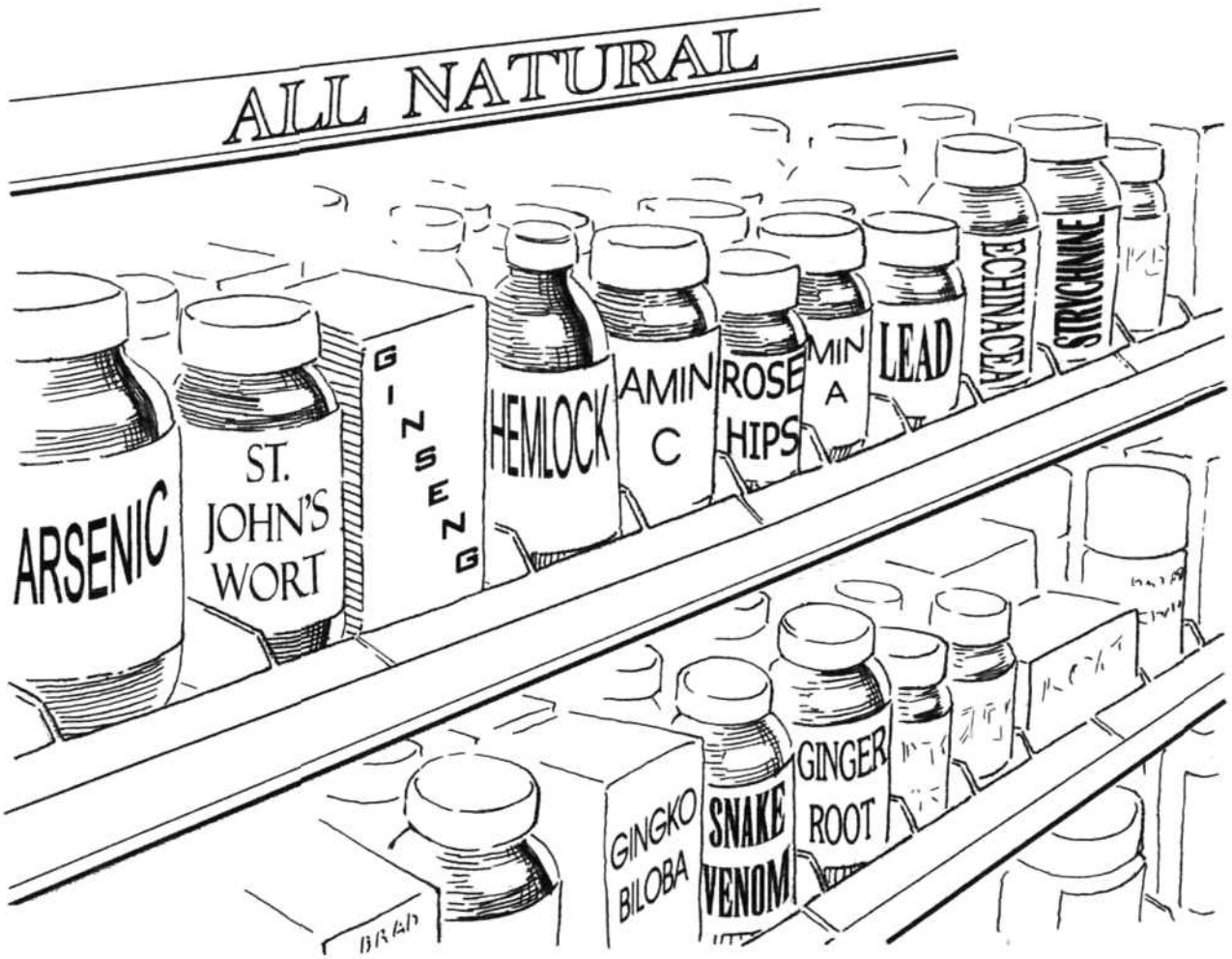
Herbal Medicines and Dietary Supplements
A Risky Health Gamble

Think herbal medicines and dietary supplements are always "natural," "pure," and free of problems associated with toxicity? Think again. There is little control or uniformity of these products, and most consumers seem oblivious to the potentially significant health risks associated with them.

JOHN M. ALLEN

Herbal medicines and dietary supplements represent a booming multibillion-dollar business in the U.S. and around the globe. The herbal medicine phenomenon is part of a much larger "alternative medicine" movement whose proponents seek to exploit both traditional methods of disease prevention and treatment as well as a variety of New Age approaches. There is no question that the active ingredients in some herbal preparations show much promise in the prevention and treatment of a wide variety of illnesses; this is evidenced by a large body of scientific data that has been amassed and published in reputable scientific and medical journals. However, the use of herbal medicines and dietary supplements also poses



Brad Marshall

significant health risks. These risks are largely due to the widely varying nature of herbal preparations and, in the U.S., to the lack of consumer protection ordinarily accorded to drug substances by the Food and Drug Administration (FDA) because herbal medicines and dietary supplements are not officially classified as drugs.

Herbal medicines and dietary supplements are typically processed plant materials or solvent extracts (essential oils) of plant materials. All plants, including herbs, naturally synthesize many (sometimes hundreds) of complex chemical compounds as part of their metabolic activities. Many of these compounds are not directly related to the plant's energy production but are toxins synthesized by the plant in order to ward off other plants, herbivores, and plant parasites. Thus, all plant materials contain large numbers of chemical compounds, some of which may exert a desired physiological effect and others which may exert no effect whatever or any number of undesirable effects when consumed by humans. In fact, many herbs contain chemical compounds that act oppositely from the principal active ingredient (Beier 1990).

In addition to the issue of heterogeneity resulting from plant biosynthesis of large numbers of chemical compounds, it has also been reported that herbal medicines are occasionally contaminated with pesticides, herbicides, heavy metals, microorganisms, and mold toxins, and have occasionally been spiked with other drugs. The chemical composition of many herbal preparations that are sold to consumers is essentially unknown. This situation is tantamount to the consumer of herbal preparations playing chemical Russian roulette. However, the FDA cannot take legal action to restrict the use of a given herbal medicine or dietary supplement until substantial harm has been proven.

Herbal medicines are, in some ways, like illicit street drugs. When a drug user buys crack cocaine or heroin on the street-corner, the dealer has no idea what is really in the glassine envelope or plastic vial and neither does the trafficker who supplies the local dealer. When a consumer buys herbal remedies at a local pharmacy, his or her pharmacist and the company that supplied them to the pharmacy have only limited information as to what is in them; in many cases the supplier

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merely repackages and distributes these products and pockets a hefty markup. As with street drugs, the dosage and purity of herbal medicines are unknown. However, the effects upon the human body produced by the active ingredients in many herbal medicines are not as well understood as the effects of cocaine or heroin.

The New Age Mantra: Organic and Natural is Better

The terms "organic" and "natural" have found widespread use in a seemingly infinite variety of contexts. Organic gardening and natural foods come to mind at once. Advertisers frequently claim that their products are "totally organic" or "one hundred percent natural." What exactly do these phrases mean? Most consumers are convinced through advertising that organic or natural products are intrinsically safer and more effective than synthetic or "chemical" products.

There is no doubt that many pharmaceutical drugs produce a variety of adverse side effects, but this is also true for herbal remedies.

To the average consumer, organic means "good" because synthetic chemicals are "bad"; natural means "wholesome," and anything else is probably loaded with chemicals (i.e., bad). In fact, some products are even labeled "chemical free." This, of course, is impossible since even the empty product container has air in it which is composed of chemicals. All of this confusion is the result of New Age propaganda and superstition as well as a certain amount of fear of chemicals. Part of the problem is that the word *chemical* is so frequently used in conjunction with *pollution* or *carcinogen*. This results in consumer confusion and anxiety and is exploited by those who derive income from the sale of so-called organic or natural products.

Unfounded and irrational fears of chemicals have been amplified by clever natural food and herbal medicine advertising campaigns to such an extent that many consumers now fear pharmaceutical drugs. So-called natural remedies are touted as safer and healthier alternatives to synthetic chemical pills dispensed from the local pharmacy. There is no evidence to support this proposition; in fact the evidence suggests the opposite conclusion. There is no doubt that many pharmaceutical drugs produce a variety of adverse side effects, but this is also true for herbal remedies. Of course, the rates of incidence and severity of side effects associated with the use of herbal medicines are known mainly through anecdotal evidence, although well-documented reports of serious adverse side effects are becoming more frequent.

At any of the wonderful upscale book and coffee shops at local malls across America and probably in Europe as well, there are entire sections of the magazine racks devoted to extolling the glories of the healing power of herbal medicines and dietary supplements and several shelves of books devoted to the same topics. A little time spent surfing the Internet is both instructive and disturbing. Web pages devoted to such pseudosciences as astrology, rolfing, crystal therapy, colon hydrotherapy, and electromagnetic therapy provide links to other Web sites devoted to the healing power of "natural" herbs and "organic" dietary supplements. One can even buy "pyramid energized" herbs that are supposedly more efficacious because they have been stored under a pyramid. Of course, this powerful effect said to be exerted by pyramids is not really surprising since some claim that storing razor blades under a pyramid keeps them sharp indefinitely.

The absurd and nonsensical practice of what is referred to as "homeopathic medicine" is quite different from the use of herbal medicines, but it is instructive to examine some similarities shared by both. Homeopathic medicines are essentially sugar pills that may have some placebo effect but contain no active ingredient at a high enough concentration to have any direct physiological effect. However, homeopathic medicines as well as herbal medicines both pose the significant risk that credulous patients with serious illnesses may forgo effective medically supervised treatments in favor of treatments offered by New Age snake oil peddlers.

What is Organic and Natural?

To a chemist, an organic substance is any substance that contains carbon atoms, and a natural product is simply one derived from plant or animal sources. It is really not possible to determine the meaning of the term "natural" as it is used in the popular literature and in advertising. Morphine that is extracted from opium poppies and morphine that is prepared synthetically are both organic chemical compounds because they both contain carbon atoms. However, there is absolutely no difference between natural morphine extracted from opium poppies and morphine that has been prepared synthetically from bottles of chemicals sitting on a shelf in the laboratory.

There is also absolutely no reason to believe that exposure to naturally derived chemicals is any less likely to be toxic than exposure to synthetic chemicals (Ames 1991). For example, a completely natural organic compound called aflatoxin is synthesized by certain fungi that grow on improperly stored corn, peanuts, and plant materials such as herbs. Aflatoxin is thousands of times more toxic to humans than DDT, a much-feared synthetic pesticide; it is also a very potent carcinogen (cancer-causing substance).

Reports of Herbal Medicine Toxicity in the Literature

Most reports of toxic effects due to the use of herbal medicines and dietary supplements are associated with hepatotoxicity

(liver toxicity) although reports of other toxic effects including kidney, nervous system, blood, cardiovascular, and dermatologic effects, mutagenicity, and carcinogenicity have also been published in the medical literature. The involvement of herbal medicines in kidney toxicity is observed so frequently that it is referred to as Chinese herb nephropathy (CHN) in the medical literature, a progressive form of renal fibrosis.

The risks of toxic effects associated with the use of herbal medicines vary significantly from person to person. "Certain users of herbs are at high risk of intoxication. These include chronic users, those consuming large amounts of a great variety, the very young, fetuses, the sick, the elderly, the malnourished or undernourished, and those on long-term medication" (Huxtable 1990). What follows is a small sampling of the many reports of adverse health effects associated with the use of herbal medicines and dietary supplements found in the current medical literature.

Herbal preparations containing germander were withdrawn from the market after their use for weight control caused a hepatitis epidemic. Mint tea containing pennyroyal oil (menthofuran and pulegone) was reported to be responsible for the death of one infant and serious injury in another due to hepatic and neurologic injuries (Bakerink et al. 1996). Herb mixtures containing chaparral (Gordon et al. 1995), aristolchia, ma-huang, germander, and Jin-bu-huan were reported to have produced life-threatening neurologic and cardiovascular manifestations after a single dose in a child, and long-term use in adults has been associated with hepatitis (Horowitz et al. 1996).

St. John's Wort is a very popular over-the-counter herbal preparation used as an antidepressant. The active ingredient in St. John's Wort is a chemical compound called hypericin. Other chemical compounds present in St. John's Wort preparations, their concentrations, and human toxicities are essentially unknown and can vary widely depending upon the source of the herb and subsequent handling. Hypericin, however, absorbs certain frequencies of light and, when present in the eye after oral ingestion of St. John's Wort, can result in alterations of lens proteins that can lead to cataract formation (Roberts et al. 1999). This observation is indirectly supported by a recently published report (A. Colasanti, A. Kisslinger, and F. Villani 2000) in which hypericin was found to produce phototoxic effects in cells. Hypericin passes the light energy that it absorbs to oxygen molecules forming toxic species including free radicals which can subsequently attack and damage a variety of biomolecules.

Podophyllin obtained from *bajiaolian*, a species of plant in the mayapple family, used in herbal laxative preparations, is reported to have caused coma and prolonged peripheral neuropathy (damage to the nervous system) in several patients (Dobb and Edis 1984). Other herbal extracts, essence of sage which contains camphor, a well-known convulsant, and essence of hysop which contains pinocamphone, a neurotoxin, are commonly encountered "natural" remedies.

The ingestion of *tripterygium wilfordii*, a Chinese herb used for the treatment of autoimmune and inflammatory diseases for many years, frequently leads to blood cell abnormalities. A recently published report found that a significant hematotoxic effect is exerted on human bone marrow cells by this herb (Pyatt et al. 2000).

In 1989, approximately one thousand five hundred people were struck down with a syndrome called eosinophilia myalgia that causes severe muscle pain, neuropathy, and a host of other symptoms after taking *l*-tryptophan dietary supplements. It is estimated that thirty of them died as a result. Some of the surviving victims of this syndrome have been disabled for life. There is substantial evidence that this syndrome was caused by a chemical contaminant found in *l*-tryptophan from a particular source (Kilbourne et al. 1986). The *l*-tryptophan that was linked to this terrible medical condition was marketed as "natural," "pure," and "safe." This topic was discussed previously in the SKEPTICAL INQUIRER (Barrett 1995). It has also been found that chromium (III) picolinate, a common component of dietary supplements, causes chromosome damage in animal studies (Stearns, et al. 1995). Many dietary supplements are ingested by consumers at dosages that far exceed medically-recommended levels.

Herbal Supplement Ephedra May Be Deadly

In early November 2000, scientists reported that the popular herbal supplement ephedra (also known as *ma huang*) may cause stroke, heart attacks, seizures, and death in otherwise healthy young people. Though some of the problems affected long-term users, others had been taking the drug for a few days or weeks.

Researchers reviewed records from 140 ephedra users who suffered medical complications from 1997 through 1999. They found that one-third of the problems the patients experienced were "definitely or probably" caused by the herbal drug, and another one-third were "possibly" caused by it.

The ingredient is used alone or combined with other drugs in hundreds of products. Because herbal supplements are not regulated by the Food and Drug Administration (FDA), uniform dosage standards are nonexistent and supplement labeling is often incomplete or misleading. This means that many of the estimated 12 million users of ephedra may not even know that they are taking it.

The research was conducted by Dr. Neal Benowitz, chief of clinical pharmacology at the University of California at San Francisco, along with Dr. Christine Haller. The research was commissioned by the FDA and appeared in the November 5, 2000, *New England Journal of Medicine*.

—Benjamin Radford

Scutellariae radix used in some herbal medications was found to cause fetal abnormalities and birth defects in animal studies resulting in defects of offspring skeletal and urinary systems (Kim et al. 1993). This herb damages the fetus as a result of the mother's exposure to the toxin during pregnancy, particularly when exposure occurs during the first trimester of pregnancy.

Use of Herbal Medicines and Increased Risks of Cancers

Pyrrolizidine alkaloids present in comfrey tea and other plant materials are widely recognized as hepatotoxins. In addition, these compounds have been identified as carcinogens. In an animal study done with Russian comfrey leaves and roots on rats, hepatocellular adenomas (a type of liver cancer) were induced in animals that received diets containing comfrey roots and leaves and, less frequently, hemangioendothelial sarcomas (cancer) of the liver were also observed (Hirono, I., H. Mori, and M. Haga 1978). In a study conducted in the Philippines, users of herbal medicines were found to have elevated risk (2.5X) of nasopharyngeal carcinomas (nasal and sinus cancers) versus non-users. This effect is thought to occur through the ability of some herbal medications to reactivate the Epstein-Barr virus (EBV) or through a direct promoting effect upon EBV-transformed cells (Hildescheim and Dosemeci 1993). Another study found a 49-fold increase in nasopharyngeal carcinomas among those testing positive for EBV who also use herbal medicines (Hildescheim et al. 1992). Thus, patients infected with EBV might well want to avoid some herbal remedies in particular.

It is very difficult to make connections between specific chemical exposures and cancer risks since people are exposed to so many different chemical compounds during their lifetimes.

The use of medicinal herbs has been correlated with high incidences of esophageal cancer. Extracts of *areca catechu, rhus coppallina, diospyros virginiana, sassafrass albidium,* and *chenopodium ambrosiodes* were found to produce tumors in rats (Kapadia et al. 1978). Madder root (*rubia tinctorum l.*) used in herbal treatments for kidney stones was found to cause an increase in malignant liver and kidney tumors in an animal study (Westendorf, J., W. Pfau, and A. Schulte et al. 1998).

It has been recently reported (Nortier et al. 2000 and Greensfelder 2000) that, in addition to developing Chinese herb nephropathy (discussed previously), a group of patients in Belgium who ingested the Chinese herb *aristolchia* after it was mistakenly added to a dietary supplement have suffered significantly elevated risks of urothelial carcinomas (cancers of the kidney and ureter). The cancer risk for these patients was so high (46%) that their physicians recommended removal of their kidneys and ureters in order to reduce their risk of cancer mortality. Surprisingly, this herb can still be readily obtained here in the U.S.

There are also reports that some herbal medicines can act as tumor promoters (Norhanom and Yadav 1995). A tumor promoter acts to induce the formation of malignant tumors as the result of exposure to another agent. The Chinese herb *wikstroemia chamaedaphen* was found to act as a tumor promoter of uterine cervical carcinoma (cancer) in mice. The herb *euphorbia virgata* has been demonstrated to promote squamous cell papilloma (a type of skin cancer) in mice (Upadhyay, R., R. Samiyeh, and A. Tafazuli 1981).

Herbal Medicine Risks and Human Longevity

Proponents of the use of herbal medicines have argued that these preparations have been used for a long time and that any serious toxicity problems would have been identified by now. This argument is wholly without merit. Herbal remedies have been used for hundreds of years but their toxicities (and in particular their cancer-causing abilities) have, as yet, remained largely unquantified. Even some pharmaceutical drugs that have undergone extensive testing (e.g., thalidomide) have later been found to exert unanticipated toxic effects. One of the most frustrating aspects of studying chemical carcinogenesis is the long latency period between chemical exposure and the development of cancers. This is problematic because it is very difficult to make connections between specific chemical exposures and cancer risks since people are exposed to so many different chemical compounds during their lifetimes. Furthermore, many people who use herbal medicines use more than one herbal preparation. Thus, there are many difficulties posed by multiple exposures over long periods of time in unravelling cancer etiology. Another obstacle to identifying cancer etiologies are the unquantified effects upon carcinogenesis associated with heredity; some people are just more susceptible to certain cancers than others.

Herbal medicines have found widespread use in China for centuries. If the life expectancy in China, let's say, two hundred years ago was short (e.g., thirty years), most people would have died from other causes before they had lived long enough to develop cancers as the result of chemical exposures such as herb ingestion. Furthermore, for most of the past two hundred years, there has been no systematic public health surveillance of human cancers. Thus, if as it appears that some herbal medicines are carcinogenic, we will not observe the effects upon cancer morbidity and mortality rates for several years in the U.S. assuming that widespread use of herbal medicines began ten to fifteen years ago.

The Modern Drug Discovery and Approval Process

A few years ago a movie called *Medicine Man* starring Sean Connery captured the popular imagination concerning

breakthrough drug discovery; it was a partly true and partly fictional account. There are many paths that lead to drug discovery. Sometimes, the development of a new drug comes about by teams of researchers travelling to remote jungle areas and collecting specimens of medicinal plants used by native people; other times by taking a closer look at an old-time domestic herbal remedy.

When a natural product such as an herb appears to have some desirable medicinal property based upon anecdotal evidence, an investigation of the chemical constituents of the plant material may be conducted. The first step is frequently to prepare a solvent extract of the plant material. When an extract is prepared from a particular medicinal herb, the plant material is dried, pulverized, and boiled in an organic solvent such as methylene chloride with collection and recycling of the solvent vapor in an apparatus that somewhat resembles a still. The solvent is removed and an extract or oil remains. This oil may contain hundreds or thousands of individual chemical compounds. In the case of many medicinal herbs, one or two of these chemical compounds may exert the desired physiological effect. The other compounds present in the extract may be inert, or cause any number of toxic effects when ingested by humans.

The extract is then carefully fractionated by chromatographic separation methods. Chromatographic separations involve distributing the mixture of chemical compounds extracted from the plant material between a stationary bed of solid particles and a flowing solvent. Under the appropriate conditions, each chemical component (or a fraction containing a small number of chemical components) will migrate through the bed of solid particles at a different rate. Each fraction is collected individually as it reaches the end of the particle bed.

Each fraction is then tested for the desired activity (usually on mice or other small animals). When a fraction is found to have a desired effect, the components in that fraction are subjected to further separation. These more finely separated fractions are then tested for activity. Ultimately, the goal is to identify a specific chemical compound present in the original plant extract that exerts the desired physiological effect.

Once the active chemical compound has been identified, its molecular structure must be determined. This is done by such techniques as nuclear magnetic resonance (NMR) spectroscopy. When the structure of the molecule (i.e., the way in which all of the atoms in the molecule are connected to one another) is mapped out, a synthetic scheme is worked out to build the molecule from scratch. Scratch, in this context, means readily available chemical reagents. Since a given drug molecule may contain as many as a hundred atoms or more, this can be a complex undertaking. Once the synthetic scheme is worked out, the drug is synthesized and purified. The resulting synthetically produced drug is absolutely identical to the drug derived from plant material.

Once the synthetic drug has undergone rigorous assessments of its safety and efficacy as per FDA regulations and is found to be acceptable, it is approved for use by the public. The manufacture of the synthetic drug is strictly regulated by the FDA. Every step is carefully assessed and contaminants are quantified and reduced to a specified concentration level in the final product. This process sometimes takes a very long time and requires the expenditure of vast sums of money by pharmaceutical companies. Once the drug is marketed, reports of any previously unrecognized side effects are monitored by the FDA. If it becomes clear that the use of a given drug represents an unacceptable risk of unwanted side effects, its use may be restricted.

Regarding herbal preparations, there is rarely any attempt to isolate the active ingredient (if one is actually present) from the herbal plant material or herbal extracts.

This procedure contrasts quite sharply with the situation regarding herbal preparations. There is rarely any attempt to isolate the active ingredient (if one is actually present) from the herbal plant material or herbal extracts. The presence of deliberately added adulterants (i.e., drugs) and accidental contaminants in the herb or herbal extract is always a risk when these products are not properly tested for purity. However, it should be pointed out that some manufacturers of herbal medicines and dietary supplements do conduct testing in order to assure that their products do not contain deliberately added impurities or accidental contaminants. This testing may also involve determination and standardization of the concentration of an active ingredient. Of course, product testing for purity and standardization of dosage is essentially voluntary and is only conducted by the most reputable manufacturers and distributors. As pointed out previously, many herbal toxicity issues are associated with the chemical compounds that are present in the herb itself rather than deliberately added or accidental contaminants. Thus, when testing for purity is performed, it provides only a limited assurance of safety.

Caveat Emptor

The convoluted paths by which herbal medicines reach the U.S. consumer may, in some cases, provide a protective shield against liability on the part of the corporations who market these products. Imagine the following fictitious scenario: plant materials sold as herbal medicines are harvested

by poor peasants in Indonesia. Unfortunately, the peasants who harvest the herbs also mistakenly pick a similar looking but highly toxic plant that grows in the same area as the herbs. These are mixed together with some other herbs which were sprayed with pesticides from an unknown source and stored in a damp basement for a couple of months and have become contaminated with mold. Most of the mold is cut off and the plants are shipped by boat to Hong Kong where a chemical stimulant is added to enhance the effect of the herbs. These herbs are then sold to Natural Consciousness Herbal Ecstacy, Inc. whereupon they are packaged and marketed in the U.S. Approximately one hundred consumers suffer some degree of liver damage and two die as the result of ingesting these contaminated products. Who is legally liable for these injuries and deaths? Natural Consciousness Herbal Ecstacy, Inc.? Not likely. Besides, a small company such as Natural Consciousness Herbal Ecstacy, Inc., has few tangible assets. Litigation, even if successful, will therefore yield little or no compensation for the victims from the herbal medicine distributor, and the chances of successful recovery of damages from the overseas suppliers are quite small indeed.

Conclusions

It is worth repeating that some herbal medicines have demonstrated efficacy for the treatment or prevention of a variety of illnesses. However, in many cases, equally effective and much safer pharmaceutical drugs are available. The consumer of pharmaceutical drugs ingests very well characterized chemical substances while the consumer of herbal medicines and dietary supplements ingests substances of essentially unknown chemical composition. If the use of a given herbal medicine or dietary supplement causes injury to consumers, it may take a long time for this to become apparent, particularly regarding carcinogenicity. Thus, each consumer of herbal preparations is acting as a sort of human guinea pig in a poorly controlled drug study; if enough of them are injured, the FDA can act to protect the rest. Furthermore, successful recovery for damages on behalf of injured consumers may be difficult or impossible.

I do not wish to suggest that the sale of herbal medicines and dietary supplements should be subject to legal prohibitions; it is my position that each individual person should be free to assess the risks and rewards of ingesting chemical substances and act accordingly. However, most consumers seem to be oblivious to the potentially significant health risks associated with the use of herbal medicines and dietary supplements.

Finally, for patients stricken with AIDS or cancer, waiting for the wheels of science, industry, and government to identify, develop, and approve new drugs may not be an option. For these patients, the use of herbal medicines and dietary supplements as well as experimental drugs that have undergone only limited testing may be justified. For the average relatively healthy person, however, the ingestion of herbal medicines and dietary supplements represents the assumption of unquantified, but potentially serious, health risks and dubious benefits.

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Psychoactive Herbal Medications

How Do We Know They Work?

Numerous psychoactive herbal medications are available to treat cognitive and emotional conditions. This article examines the evidence for their effectiveness and our assurances that it's not "all in our minds."

MARCELLO SPINELLA

The use of psychoactive plants is a phenomenon common to all human civilizations. The psychological and behavioral effects of such plants were likely recognized in prehistoric times, and their uses have been passed down across generations. Plants are the oldest and perhaps still the primary source of medicines. We are now able to synthesize novel drugs, but the bulk of psychoactive drugs still derive from plant sources. For example, caffeine is perhaps the most frequently used stimulant in the world, consumed in the form of soft drinks, tea, and coffee. Many herbal medications with reputations for treating illnesses are freely available to the public, but the empirical basis for their effectiveness often remains obscure. This article examines the evidence for psychoactive herbal medicines.

Discipline	Contribution
Botany	Structure, function, and distribution of plants
Biochemistry	Chemical composition of plants, active constituents
Pharmacology	Effects of the drug in the body, effects of the body on the drug
Psychopharmacology	Effects of the drug on mind, brain, and behavior
Pharmacognosy	Scientific study of the medicinal uses of plants
Ethnobotany, Ethnopharmacology	Uses of medicinal plants/drugs in the context of culture
Neuroanatomy	Effects of drugs on brain or small-scale brain structure
Neurophysiology	Effects of drugs on neuronal function and signaling
Neuroradiology	Imaging of the functional brain effects of drugs
Neurochemisty	Actions of drugs on brain chemistry and receptors
Clinical psychology, Psychiatry, Neurology	Clinical effects of drugs in the treatment of mind/brain illnesses
Neuropsychology	Characterization and quantification of the cognitive effects of drugs

Table 1. Scientific disciplines contributing to herbal psychopharmacology

The Prevalence of Alternative Herbal Medications

Large surveys indicate that the use of alternative medicine is prevalent in the United States (Eisenberg et al. 1998). Forty-two percent of the population acknowledged trying at least one form of alternative medicine during the previous year, most commonly to treat chronic conditions such as back problems, anxiety, depression, and headache. The popularity of herbal medicine has enormous implications for medical professionals. Only about 40 percent of those patients surveyed informed their physician of their use of alternative medicine, and it was estimated that 15 million took prescription medications concurrently with herbal medications and/or high-dose vitamins. This presents an enormous potential for adverse interactions. For example, ginkgo biloba is known to prevent clotting and can interact with blood-thinning medications. At present, herbal medicines are sold as supplements as long as they are not represented as treatment for a disease (Dietary Supplement Health and Education Act of 1994). While this may meet legal standards, it leaves consumers with little information to guide them.

Alternative Herbal Medicine

Several alternative medicine systems employ plant drugs to cure ailments. Homeopathy posits that "like cures like," so medications aim to mimic the symptoms of the illness and provoke a compensatory reaction. Chinese herbal medicine suggests that the illness arises from imbalances of the *yin* and *yang* energy within a person. Thus, treatment consists of bringing these two energies back into balance. Ayurvedic medicine is an ancient Hindu medical system that also employs herbs to treat illnesses.

While such philosophies surrounding herbal medicine may seem innocuous as long as the treatments are effective, an accurate conceptual model can impede further understanding of how they work and hamper the discovery of potential novel uses. *Pharmacognosy* is a scientific discipline that seeks empirical validation of the therapeutic use of plants through experimental and clinical research (Robbers et al. 1996). This research requires money, time, and effort, but it yields results that are proven and reliable. Such research seeks to minimize personal biases, extraneous influences, or pure chance.

Traditional Acquisition of Knowledge About Herbal Medicines

Traditional herbal medicine systems grew out of our serendipitous discoveries from interactions with plants. While traditional systems have arisen to explain their therapeutic effects, the beneficial effects of herbs were originally discovered by trial and error. One does not need to know why an herbal medicine works in order to derive benefit from it. The herb's biochemical effects occur whether or not one has an accurate understanding of them. If the biochemical effects of an herb bring some form of benefit to an organism, its use will be behaviorally reinforced, provided that beneficial consequences are reasonably *contiguous* (occur close in time) and *contingent* (have a predictive relationship). This does not require any explicit knowledge about the plant other than an ability to identify it. An extreme example of this comes from the nascent field of *zoopharmacognosy*, which studies the therapeutic uses of plants among animals. Tanzanian chimpanzees

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are observed to use the *Aspilia* plant, from which they derive no apparent nutritional benefit (Rodrigues et al. 1985; Page et al. 1992). However, the plant contains a chemical called thiarubine-A, which protects against certain gastrointestinal parasites and microorganisms. Although the chimpanzees presumably do not have any detailed, formalized information about the plants, they derive some noticeable benefit from eating it and the behavior is reinforced.

Do Psychoactive Herbal Medications Work and How?

Several scientific disciplines contribute to our understanding of the herbal medicines (table 1). To fully understand the effects of a herbal medication, we must obtain a botanical description of the various parts of the plant and perform biochemical analyses to identify the constituents responsible for its effects. Pharmacological studies of the constituents determine their physiological effects and how the body metabolizes and eliminates them. Of particular concern is whether the ingredients cross the blood-brain barrier in sufficient quantities to enter the brain. *Ethnobotany* and *ethnopharmacology* study the cultural context of plant drugs showing how they are used and how beliefs are instilled about what they do.

Neurochemical and neurophysiological studies of herbal medicines can characterize the detailed effects of the drug on neurons. Psychology and psychiatry assess the mental and behavioral effects of the herbal medicine through clinical studies. Neuropsychology is particularly equipped to quantify and evaluate the specific cognitive effects of plant drugs with batteries of psychometric tests. Ideally, functional brain imaging techniques can be used to investigate psychoactive herbal medicines. The electroencephalogram (EEG) can grossly measure changes in the brain's electrical patterns after a herbal medicine is given (Itil et al. 1998). More recent neuroimaging techniques such as positron emission tomography (PET) and functional magnetic resonance imaging (fMRI) can detect regional changes in cerebral blood flow or glucose metabolism caused by a herb.

Thus, a psychoactive herbal medicine can be examined on multiple levels, from molecular interactions to behavioral and cognitive effects. Such results provide convergent evidence for the herb's proposed mechanism of action.

Essential Features of Herbal Drug Studies

In addition to understanding *how* an herbal medication might work, we must also evaluate *whether* the herbal medication really works. Experimental studies of drugs must have certain critical elements (see table 2). Many studies done on herbal medications lack proper methodology, making their potentially useful results unreliable. Studies need to have a placebo control group, in which some subjects receive an inactive treatment that closely resembles the active treatment. Placebos create powerful expectations that influence the results of the study, especially when one is studying psychoactive drugs (Straus and von Ammon 1996; Gordon 1996). For example, placebos can create temporary antidepressant effects, but they differ from real antidepressants in terms of the pattern and persistence of the effect. In cases where it is difficult to ethically justify a placebo group, and thus deprive subjects of needed treatment, one can instead compare the herbal medication with an established treatment.

It is also useful to employ several doses of the drug and establish a dose-response relationship, showing that the magnitude of effect varies with the size of the dose. This strengthens the pharmacological nature of the effect and helps determine the appropriate dose for clinical use.

Another key element in the experimental study of psychoactive herbs is randomized assignment of subjects to the various control and experimental groups. Double-blindedness is also an essential facet of a controlled study. These features eliminate potential bias by the researcher and any self-selection effects by the subjects. Finally, statistical analysis of the results is needed to ensure they are not likely due to chance occurrence.

Clinical Decisions: Quality of Evidence

When evaluating a treatment for clinical use, one must consider the quality of evidence that supports it. A Canadian task force developed such guidelines (table 3), which have subsequently been adopted by other regulatory panels (Canadian Task Force on the Periodic Health Examination 1979; Woolf 1992).

The quality of evidence is categorized into three classes: Class I means that the treatment has at least one randomized, controlled study to support it. Class II evidence covers studies without randomization, cohort or case-control studies, or uncontrolled research with dramatic results. Class III evidence includes the expert opinions based on research and experience.

While the latter classes of evidence provide useful information, Class I evidence should be sought for all herbal medicines used clinically. Case studies and anecdotal reports can provide useful information and should be treated seriously, but they should also be followed up with verification by empirical research.

Necessary Elements
Control groups (e.g., placebo)
Randomization
Double-blind
Other Useful Elements
Dose-response relationship
Comparison to an existing, established treatment

Table 2. Key methodological elements in herbal drug studies

Class I	At least one properly designed, randomized controlled trial
Class II	
II-1	Well-designed, controlled trials without randomization
II-2	Well-designed, cohort or case-control analytic studies, preferably from more than one center or research group
II-3	Comparisons between times or places without intervention; dramatic results in uncontrolled experiments
Class III	Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees

(Canadian Task Force on the Periodic Health Examination, 1979)

Table 3. Quality of evidence for evaluating a treatment

Psychoactive Herbal Medicines

The remainder of this article examines the research surrounding a few selected psychoactive herbs to illustrate some of the above topics:

St. John's Wort

St. John's Wort (*Hypericum perforatum*) is an herb traditionally used to treat depression, insomnia, and anxiety (Kowalchik and Hylton 1987; Heiligenstein et al. 1998). It contains several classes of chemical constituents that may contribute to its pharmacologic effects (Nahrstedt et al. 1997; Erdelmeier 1998).

There are several possible neurochemical mechanisms by which St. John's Wort alleviates depression. Initial attention was drawn to hypericin and pseudohypericin since they inhibit the enzyme monoamine oxidase (MAO), as do several pharmaceutical antidepressants. However this effect is small at normal oral doses (Muller et al. 1997; Thiede and Walper 1994). Another constituent, hyperforin, blocks reuptake of the neurotransmitters serotonin, norepinephrine and dopamine (Muller et al. 1998). This mechanism is also common to other pharmaceutical antidepressants, which similarly prolong the activity of those neurotransmitters. For example, fluoxetine (Prozac) and sertraline (Zoloft) block reuptake of serotonin. Hyperforin also similarly causes adaptive changes in the brain over time (Muller et al. 1994, 1997, 1998). Other neurochemical actions of St. John's Wort have been discovered, but the actions of hyperforin may be sufficient to account for the antidepressant effect.

Electroencephalographic studies have shown St. John's Wort creates changes in the brain activity consistent with those of other antidepressant drugs (Sharpley et al. 1998). A cognitive study in humans shows St. John's Wort to lack any negative effects on attention, concentration, or reaction time (Schmidt and Sommer 1993). The antidepressant effects of St. John's Wort have been supported in both animal and human research. A number of antidepressant-like effects are seen in animal models of depression (Chatterjee et al. 1998a, 1998b; Okpanyi and Weischer 1987). Meta-analyses have evaluated methodologically controlled human trials of St. John's Wort, in which it proved superior to placebo (Linde et al., 1996; Kim et al. 1999). Hyperforin was shown to be a responsible ingredient in some studies, and a dose-response relationship was obtained. A few studies found St. John's Wort to be equivalent in effectiveness to other standard antidepressants, including two selective serotonin reuptake inhibitors (Linde 1996; Vorbach 1994, 1997; Harrer et al. 1994; Brenner et al. 2000; Schrader 2000).

Although long-term safety of St. John's Wort has not been evaluated, it has not shown any serious toxicity in published reports (Heiligenstein et al. 1998). Side effect are generally mild and occur at a rate comparable to placebo (Ernst et al. 1998). Further, it may have a better side effect profile than pharmaceutical antidepressants (Kim et al. 1999; Schrader 2000; Linde et al. 1996). Phototoxicity has occurred in animals grazing on the plant, but this does not appear to be a problem in humans taking therapeutic doses (Brockmöller et al. 1997). However, pharmacokinetic interactions have been noted with the drugs warfarin, digoxin, theophylline, cyclosporin, and the protease inhibitor indinavir (Nebel et al. 1999; Ruschitzka et al. 2000; Johne et al. *1999*; Yue et al. *2000*; Miller *2000*). Given their common mechanism of action, concurrent use of St. John's Wort with other antidepressants is not recommended (Gordon 1998).

Thus, St. John's Wort's traditional reputation as an antidepressant is supported by neurochemical, animal, and human clinical studies. Although much research remains to be done, St. John's Wort is a prime example of a traditional herbal treatment verified by multiple levels of scientific research.

Ginkgo

Ginkgo biloba is a tree that grows characteristic fan-shaped leaves. It has been known in the Chinese medical literature as a treatment for memory loss for hundreds of years (Field and Vadnal 1998). A class of chemicals have been found unique to gingko, termed ginkgolides A, B, C, M and J, and bilobalide. Gingko extracts alter a number of neurotransmitter systems in the brain. They increase the activity of acetylcholine, at concentrations likely to be reached with normal doses (Kristofikova et al. 1992; Kristofikova et al. 1997; Taylor 1986). Acetylcholine is a crucial neurotransmitter in memory and other cognitive abilities. Ginkgo may also produce cognitive effects by interacting with the neurotransmitters serotonin and norepinephrine (White et al. 1996; Ramassamy et al. 1992; Huguet et al. 1994; Brunello et al. 1985). It relaxes arteries and prevents blood platelet-formation, which would allow for increased blood flow to the brain (Chen et al. 1997; Lamant et al. 1987). Finally, ginkgo has antioxidant and neuroprotective effects (Maitra et al. 1995; Lugasi et al. 1999).

EEG studies show that ginkgo creates electrical changes in the brain consistent with cognitive activation (Kunkel et al. 1993; Itil et al. 1998). These effects are comparable to those of the drug

tacrine (Cognex), which is prescribed for Alzheimer's disease. Ginkgo improves learning in several animal models, and several studies have assessed the cognitive effects of ginkgo in humans with Alzheimer's disease, vascular dementia, and age-related cognitive decline. A meta-analysis of controlled studies showed that ginkgo produces statistically significant improvements in people with Alzheimer's disease (Oken et al. 1998). While the magnitude of improvement with ginkgo is modest, it is comparable in size to the drug donezepil (Aricept), a standard treatment for Alzheimer's disease. Preliminary results indicate that ginkgo may also improve cognitive function in normal adults as well (Subhan and Hindmarch 1984; Warot et al. 1991).

Clinical studies of ginkgo have not reported any serious side effects, and the incidence of side effects is equivalent to placebo (Field and Vadnal 1998; Le Bars et al. 1997). The primary concern with ginkgo seems to be interactions with other blood-thinning medications (Fugh-Berman 2000).

Ginseng

Ginseng (referring here to *Panax ginseng*) is a plant with a long history of use. Ancient Chinese writings note cognitive improvement to be among its uses.

The major pharmacologically active constituents of ginseng are the ginsenosides (Gillis et al. 1997; Robbers et al. 1996). Ginsenosides increase production of the neurotransmitter acetylcholine and stimulate its receptors (Benishinm 1992; Lewis et al. 1999). It also dilates blood vessels, which could increase blood flow to the brain (Kim et al. 1992; Ko et al. 1996). Two ginsenosides enhance electrical changes in the brain which are thought to underly the formation of memories (Abe et al. 1994). Ginseng may also have neuroprotective effects, guarding neurons from damage caused by lack of blood flow (Wen et al. 1996).

Several animal studies have shown ginseng to facilitate learning and memory (Gillis 1997; Wang et al. 1995; Nitta et al. 1995; Petkov and Mosharrof 1987; Petkov et al. 1992). Unfortunately, very few cognitive studies of ginseng have been performed in humans. One study assessed several cognitive functions, but found improvement only in mental arithmetic (D'Angelo et al. 1986). Thus, ginseng has potential to serve as a cognition-enhancing herbal medicine, based on its neuropharmacology and animal studies. However, there is a severe lack of controlled human trials that would need to be done before any conclusions can be drawn.

Typical doses of ginseng are not usually associated with serious adverse effects (Robbers and Tyler 1999). A "ginseng abuse syndrome" consisting of hypertension, irritability, nervousness, and sleeplessness has been reported in people taking inappropriately large doses (Siegel, 1979). Little is known about the interaction of ginseng and other medications, but interaction with the anticoagulant warfarin and antidepressant phenelzine have been reported (Janetzky and Morreale 1997; Jones and Runikis 1987).

Kava

Kava (*Piper methysticum*) is a plant native to the South Pacific islands. It is known traditionally for its relaxing properties, and producing a calm but alert state.

The pharmacologically active chemicals from kava are the kavapyrones, also referred to as kavalactones (Lebot et al. 1997). Kavalactones enhance the actions of the neurotransmitter GABA, which has a calming effect on brain activity. Similarly, pharmaceutical antianxiety drugs such as Valium and Xanax also enhance the actions of GABA (Boonen and Heberlein 1998; Jussofie et al. 1994; Davies 1992). Kavalactones also block sodium and calcium channels in the brain, which additionally dampens excitation in the brain (Gleitz et al., 1995; Gleitz et al. 1996; Magura et al. 1997; Schirrmacher et al. 1999). Kava may also increase the activity of monoamine neurotransmitters such as norepinephrine (Seitz et al. 1997; Uebelhack et al. 1998).

EEG studies of kava show that it slows down activity in the brain, similar to other sedative drugs (Frey 1991). However, it does not seem to impair cognition at lower doses (Foo and Lemon 1997). A review and meta-analysis of methodologically controlled studies of kava for treating of anxiety has shown kava to be consistently superior to placebo (Pittler and Ernst 2000). One study additionally found it equivalent in efficacy to the benzodiazepine oxazepam (Serax) (Lindenberg and Pitule-Schodel 1990). While it is

likely that kava improves sleep, no clinical studies have yet been conducted to assess this. Given its neuropharmacological mechanisms, combination of kava with other sedative drugs, including ethanol, is not recommended.

Conclusions

Several types of research provide information about the mechanisms and effectiveness of psychoactive herbal medicines. St. John's Wort and Ginkgo biloba are probably at the forefront in this respect, having the greatest bodies of research to support their use. Properly investigated, herbal medicines may be a valuable ally in the treatment of brain disorders.

To obtain such research requires time, money, and effort. Unlike pharmaceutical drugs, herbal medications are not patentable, so private companies lack an incentive to fund the research to establish their safety and effectiveness. Herbal research at present is largely limited to private endowments and government funding.

Despite this fact, the popularity of herbal medicines persists. It is therefore necessary to pool knowledge about herbal medicines and coordinate research efforts. Education of the public and health professionals is the best way to ensure optimal and safe use of psychoactive herbs.

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Chiropractic

Does the Bad Outweigh the Good?

Many people go to chiropractors for relief of back pain. But there is reason for caution. Much of what chiropractors do is nonsense, and they often misinform their patients.

SAMUEL HOMOLA

Do you need to see a chiropractor? Many people think they do. Just about everyone thinks of a chiropractor when back pain is mentioned. There is considerable evidence that spinal manipulation can help relieve some types of neck and back pain. But neck manipulation can be dangerous. And according to a study published in the October 8, 1998, *New England Journal of Medicine* (Cherkin 1998), spinal manipulation may be no more effective than physical therapy in the treatment of back pain and only marginally more effective than following a self-help instruction booklet. So what about chiropractic treatment? Should you—or any member of your family— ever go to a chiropractor?

There is no doubt that dramatic relief of back pain will occasionally occur when manipulation is used to unlock a binding spinal joint. Many people with acute or chronic back pain experience relief of symptoms when the spine is loosened by manipulation performed by a chiropractor, an osteopath, a physical therapist, or an orthopedist. Manipulation is most readily available from chiropractors, however, and a report issued by the Rand Corp. (Shekelle et al. 1991) revealed that 94 percent of all such manipulation in the United States is done by chiropractors. For this reason, many people who have back pain will visit a chiropractic office where they will experience spinal manipulation for the first time.

A survey of *Consumer Reports* readers, published in May 2000 (Consumer 2000), revealed that 35 percent of 46,860 respondents had used alternative therapies for a variety of problems, 40 percent of whom had chiropractic treatment for back pain. The back-pain patients rated deep-tissue massage, chiropractic treatment, exercise, and physical therapy (in that order) as more effective than prescription drugs, acupuncture, over-the-counter drugs, and other forms of treatment.

Obviously, many people with back pain are going to chiropractors, and most of them are satisfied with the care they receive. But many are unaware of the controversy and the nonsense associated with some forms of chiropractic treatment and often become victims of misinformation.

The Theory of Chiropractic

It is now generally accepted that spinal manipulation can relieve some types of back pain. Most chiropractors claim to do more than just treat back pain, however. Clinging to the scientifically rejected theory that misaligned or "subluxated" vertebrae cause "nerve interference" that results in disease or ill health, many chiropractors use "spinal adjustments" to treat disease and infec-tion as well as back pain. The Association of Chiropractic Colleges bolstered support for this theory in 1996 when the presidents of all sixteen North American chiropractic colleges reached a consensus and issued a position paper stating that "Chiropractic is concerned with the preservation and restoration of health, and focuses particular attention on the subluxation" (Association 1997).

The chiropractic profession continues to define itself as a method of correcting subluxations to restore and maintain health, despite the fact that there are no scientific studies to indicate that vertebral misalignment or any other problem in the spine is a cause of disease or infection. Basing their treatment on the vertebral subluxation theory, many chiropractors claim to be primary care physicians capable of treating and preventing a broad scope of human (and animal) ailments.

Some chiropractors advise that spinal adjustments should begin at birth to correct subluxations caused by "birth trauma." The entire family may be advised to undergo regular life-long spinal adjustments in order to maintain optimum health by "keeping the spine in line." Some chiropractors specialize in chiropractic pediatrics. According to the American Chiropractic Association (Goertz 1996), 10 percent of patient visits to chiropractors are made by children and adolescents who are treated for such maladies as otitis media, asthma, allergies, infantile colic, and enuresis (bed wetting). An article in the April 2000 American Medical Association journal *Archives of Pediatric and Adolescent Medicine* (Lee 2000) warned that chiropractic pediatric care is often inconsistent with recommended medical guidelines. "When I contemplate a chiropractor treating a 2-week-old neonate with a fever," said the editor in a sidebar comment, "I get a gigantic headache."

Studies conducted by chiropractors and published in "peer reviewed" chiropractic journals often recommend treatment for such conditions as infantile colic and asthma. A study published in the *Journal of Manipulative and Physiological Therapeutics* (Wilberg 1999), for example, concluded that "Spinal manipulation is effective in relieving infantile colic"—a conclusion not confirmed with reliable, unbiased research.

When medical researchers tested chiropractic manipulation as a treatment of asthma in children, they reported that "the addition of chiropractic spinal manipulation to usual medical care provided no benefit" (Balon 1998). Although chiropractic manipulation can be beneficial in the treatment of some types of neck and back pain, I always advise parents not to take their infants and children to a chiropractor, since the risk may outweigh any benefit.

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Limitations of Chiropractic

Since chiropractors work on the back, most people think of the chiropractor as a back specialist. But when back-pain victims visit a chiropractic office, they may be given pamphlets suggesting that chiropractic treatment is also beneficial for asthma, infantile colic, ear infection, digestive disturbances, and a host of other organic or visceral problems. There are many good chiropractors who do a good job treating back pain, but few voluntarily limit their treatment to the care of back pain. Chiropractic colleges are still teaching the theory that using spinal adjustments to correct vertebral subluxations will restore and maintain health. Unless you see a chiropractor who has been recommended by an orthopedic specialist or who works with physicians in a back-pain clinic, your chances of finding a properly limited chiropractor are slim. Poorly informed consumers may not know where to draw the line when they visit a chiropractor.

"That spinal manipulation is somewhat effective symptomatic therapy for some patients with acute low back pain is, I believe, no longer in dispute," said the editorial in the *New England Journal of Medicine* (Shekelle 1998). But ". . . there appears to be little evidence to support the value of spinal manipulation for non-musculoskeletal conditions. For this reason, I think it is currently inappropriate to consider chiropractic as a broad-based alternative to traditional medical care."

There are some basic guidelines and caveats you should observe when seeking chiropractic care for back pain.

Be on Guard

Look for a chiropractor who openly states that his or her practice is limited to the treatment of neuromusculoskeletal problems that have a mechanical origin.

There is a small group of chiropractors who are members of the National Association of Chiropractic Medicine (NACM) who have openly denounced the chiropractic subluxation theory, but the chances of finding an NACM chiropractor in your community are small. If you cannot find a chiropractor who is a neuromusculoskeletal specialist or who works in a back-pain clinic as a member of a back-care team, you'll have to be on guard as an informed consumer if you are to protect yourself from the nonsense associated with chiropractic treatment. There are a number of chiropractic procedures and techniques that you should avoid, some of which can be dangerous as well as a waste of time and money.

Seek Appropriate Manipulation

Properly performed spinal manipulation is always done by hand. Chiropractors who believe that slightly misaligned vertebrae can cause disease often use machines or small hand-held spring-loaded mallets to tap misaligned vertebrae back into place. The National Board of Chiropractic Examiners reported in 2000 that 62.8 percent of survey respondents said they used an Activator mallet to adjust subluxations (Christensen et al. 2000). Such chiropractors might also use instruments to measure heat and electrical activity over skin surfaces in a search for subluxations. The only treatment they may offer is a spinal adjustment for whatever ails you.

A good chiropractor who specializes in the care of neuromusculoskeletal problems does not use instruments and machines to diagnose and treat subluxations. And his treatment is not limited to the spinal adjustment. Physical therapy, massage, exercise, rest, home treatment with hot or cold packs —or no treatment at all—are sometimes more appropriate than spinal manipulation.

Avoid Unnecessary Treatment

While an acute episode of back pain can be incapacitating and scary, remember that most back pains resolve in two to four weeks. After limiting bed rest to a couple of days, most back-pain victims can begin moving around and gradually resume normal activities over a period of a week or two. If you go to a chiropractor for relief of back pain, you should not continue with treatment if your pain worsens during the first week or if you are not any better after two weeks. If your symptoms persist after one month, see an orthopedic specialist for a definitive diagnosis.

A chiropractor who is reasonably competent in making a diagnosis might immediately refer you to a specialist if certain red flags are present, such as: fever; a history of cancer; prolonged back pain unrelieved by rest; the possibility of a fracture resulting from advanced age, long-term use of steroids, or severe injury; and so on. In the case of a simple strain, you might be advised that rest and time are the best treatment. But you cannot always rely on the diagnostic ability of a chiropractor. Some chiropractors "analyze" the spine in a search for subluxations rather than make a diagnosis. They always find subluxations that require spinal adjustments. Such chiropractors are less likely to offer appropriate advice and are more likely to subject you to prolonged and unnecessary treatment.

Be wary if your chiropractor's diagnosis is "subluxated vertebrae." Be even more wary if you are given a treatment plan that recommends daily visits that are gradually reduced in frequency over a period of several months. Such plans usually lead into "maintenance care" that requires one or two treatments a month for the rest of your life!

Popping Normal Backs

As a general rule, chiropractic treatment, or manipulative treatment for back pain, should be discontinued when symptoms disappear and you are feeling well. It is not necessary to continue with occasional spinal adjustments unless you have a structural problem that causes chronic back pain that can be temporarily relieved with manipulation. Frequent and unnecessary manipulation may do more harm than good, causing you to seek treatment for symptoms *caused* by the manipulation.

Normal spinal joints often make popping sounds when the joint surfaces are forcefully separated by manipulation.

Chiropractic patients often interpret these sounds as movement of vertebrae that are out of place. Some chiropractors use the popping sound to encourage patients to return for regular spinal adjustments in order to "maintain vertebral alignment." While such treatment has a strong placebo effect, it is misleading and tends to perpetuate illness or fear of illness.

"Neck Specialists"

Some subluxation-based chiropractors believe that most ailments, including low-back pain, are related to misaligned vertebrae in the neck. These "upper cervical specialists" always adjust the neck, usually the top two vertebrae at the base of the skull. This can be dangerous, since excessive rotation of the head and upper cervical spine places a strain on the vertebral arteries and can result in vascular injury or stroke.

There are special cases in which cervical manipulation can be beneficial when vascular problems have been ruled out and head rotation during manipulation does not exceed 50 degrees. But cervical manipulation should never be done routinely, especially as a preventive-maintenance measure. Most of us will never need cervical manipulation. Upper cervical chiropractors who manipulate the neck of every patient they see should be avoided. Elderly persons, especially those who have vascular disease or who might be taking blood thinners, should not submit to neck manipulation of any kind.

The Dangers of Neck Manipulation

A 1996 Rand report on *The Appropriateness of Manipulation and Mobilization of the Cervical Spine* (Coulter 1996) estimated that stroke and other injuries resulting from cervical spine manipulation occurred about 1.46 times per 1,000,000 manipulations. It also concluded that only 11.1 percent of reported indications for cervical manipulation could be labeled appropriate. A patient who receives regular, frequent, and totally unnecessary neck manipulation is subjected to greater risk. Since many cases of stroke caused by cervical manipulation have not been recognized as such, studies are being done to determine how many stroke victims had neck manipulation prior to their stroke. The incidence of stroke from cervical manipulation might be much higher than indicated in past studies. A study by the Canadian Stroke Consortium, published in the July 18, 2000, *Canadian Medical Association Journal* (Norris 2000), for example, reported that stroke resulting from neck manipulation occurred in 28 percent of 74 cases studied. Other causes were sudden neck movement of various types. The most common finding was vertebral artery dissection (splitting or tearing of arterial walls with clot formation and embolism) caused by sudden movement or rotation of the top two cervical vertebrae.

Chiropractors commonly manipulate the upper cervical spine as a treatment for head and neck pain. But since such pain in itself can be a symptom of vertebral or carotid artery dissection, especially following injury, it may be wise to forego neck manipulation for sudden onset of head or neck pain until risk factors can be better identified. Informed consent should always be obtained from patients about to undergo cervical manipulation. In many cases, massage, traction, and other forms of therapy can be substituted for prescribed cervical manipulation. Tension headache, for example, is commonly treated with chiropractic neck manipulation. A study published in the *Journal of the American Medical Association* (Bove 1998) reported that spinal manipulation was no more effective than massage in relieving episodic or recurring tension headache.

So be cautious. Until studies on cervical manipulation have been completed, don't submit to neck manipulation unless you have a problem that cannot be treated any other way. A chronic "cervicogenic" head pain, for example, in which pain is transferred from joints in the cervical spine, can often be relieved with appropriate cervical manipulation. But such manipulation should be done only after a correct diagnosis has been made and other forms of treatment have failed.

A good chiropractor can do a lot to help you when you have mechanical-type back pain and other musculoskeletal problems. But until the chiropractic profession cleans up its act, and its colleges uniformly graduate properly limited chiropractors who specialize in neuromusculoskeletal problems, you'll have to exercise caution and informed judgement when seeking chiropractic care.

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Damaged Goods?

What, If Anything, Does Science Tell Us About the Long-term Effects of Childhood Sexual Abuse?

A recent meta-analysis of child sexual abuse studies typifies a common problem when social science research is used to drive socio-political agenda. Empirical gaps are plugged with wish-list postulates of special interest groups.

MARGARET A. HAGEN

A fate worse than death. Scarred for life. Stolen childhood. Damaged goods.

This is the litany of merciless descriptions of the victims of childhood sexual abuse. Hearing these doleful judgments always makes me think of women in war who kill themselves or are killed by their men after the dishonor of rape. Better off dead, it is said.

Well, they are not.

I've been on the alert for several years for the opportunity to cry out against the professional victimologists, to extol the glorious resilience of human beings, yes, even of children, and to let a little air and light in to the dark cabinets

of our thinking about the psychological effects of bad sex.

The publication in 1998 of a mega-study on the long term effects of childhood sexual abuse by three researchers, Bruce Rind, Robert Bauserman, and Philip Tromovitch seemed at first blush to provide such an opportunity.

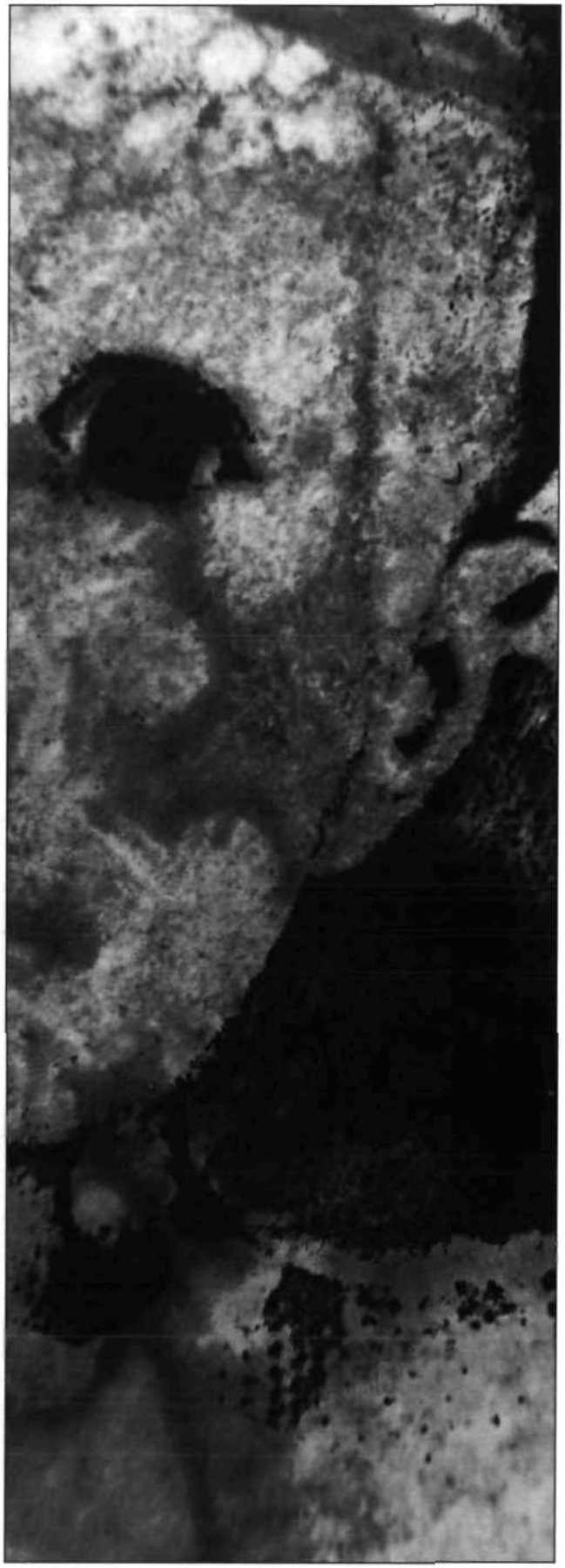
Entitled "A Meta-Analytic Examination of Assumed Properties of Child Sexual Abuse Using College Samples," this statistical analysis of fifty-nine past published studies looked at the effects of childhood abuse on young adults currently enrolled in college. Rind and his colleagues reported that some of the students did not reveal any evident lingering symptomatic effects of the past abuse—loosely defined, that differences among individuals were large, that effects tended to be worse for girls than for boys, and worse when the sex was extorted by force or threat, that the family environment was the critical factor in predicting the degree of adjustment difficulty, and that some young people—far more boys than girls—reported to researchers that they had found the experience neutral or positive.

Using the findings of Rind et al., I figured I could point out that sex crimes are not all created equal, that the middle-aged married man in the closet who solicits sex from the State Trooper at the highway rest stop is not Jesse Timmendequas, the man who raped and killed Megan Kanka (of Megan's Law fame) after serving eight years for the rape and attempted murder of another little girl. I hoped to use the study to say there are, in fact, differences between prepubescent children and teenagers, that there is, in fact, an important difference between adult males aroused by five-year-olds and men aroused by mature teens and that calling them all pedophiles is misleading. And I hoped to call attention to the fact that the illogic in our determination of ages of majority for various purposes has produced a system that deems youths responsible for their actions and competent to be tried and executed as adults some ten years before they are considered competent to purchase cigarettes. Lastly, I wanted to note that inevitable harm to each and every individual touched by a class of actions is not a prerequisite to prohibiting and sanctioning that class.

I even had a crushing rejoinder for the 350 members of Congress who voted to condemn the Rind study and for those nationwide who advocate censorship by the American Psychological Association lest data be misused to further the agendas of organizations like the North American Man/Boy Love Association. (NAMBLA allegedly posted the study's conclusions on their Web page.) I was going to write: "Modern Inquisitors should remember this: That Satan's henchmen used Galileo's finding that Earth moves around the Sun to harm Holy Mother Church matters not at all to the facts. You may not want to hear it, but as Galileo whispered upon leaving the chambers of the Inquisition, '*E pur si muove!*'"

Alas, it was not to be. That rant is on hold. Rind, Bauserman, and Tromovitch in fact have given me no new findings to advance my causes. Indeed, politically, they have seriously undermined them all. I began reading the Rind article at the end, and so first encountered these provocative conclusions:

"One possible approach to a scientific definition, consistent



with findings in the current review...is to focus on the young person's perception of his or her willingness to participate and his or her reactions to the experience. A willing encounter with positive reactions would be labeled simply adult-child sex, a value-neutral term" (46).

Here, these researchers are saying that their findings show it is scientifically important to distinguish between children who consent to sex with adults and those who do not in assessing the long-term effects of abuse. Elsewhere, they assert the critical importance of distinguishing between young children and adolescents, and between children whose reactions reportedly were positive and those whose reactions reportedly were not.

There is an old saw in the sciences that you cannot prove the null hypothesis. You cannot conclude that "nothing happened" just because you failed to find it. Your measure may be too coarse or too fine, ill-timed, or simply off the mark.

Consent, Age, and Reactions of Children to Sex With Adults

Do the findings of this analysis really force us to the conclusion that consent, age, and reported reactions are critical to the determination of the long term effects of childhood sexual abuse?

Let us look first at consent. Rind et al. claim that their review shows that the consent of the child is a crucial variable in determining whether the sex abuse was harmful or not. Does it?

The consent analysis covers a subset of forty-seven studies in which researchers asked college students "whether (their) CSA [Childhood Sexual Abuse] experiences were limited to unwanted sex or also included willing sexual experiences." Of the boys, 1,957 reported that the CSA had been "both willing and unwanted," and 990 said it had been unwanted only. For the girls, 9,363 reported that their CSA had been "both willing and unwanted" and 2,268 reported that it had been unwanted only.

Are we to take these retrospective reports of college students as reliable evidence for the importance of children's consenting to sex with adults? How old were these children when they reportedly consented? No one can say because Rind et al. did not analyze for effects of the age of the child at the time the abuse was experienced.

In some of the studies, the general ages of the children at the time of the abuse are indicated with the rather vague notation, "before puberty." In one case the average age of the children was 12.5 years with a range from 6 to 15, in two others the age noted was 10 to 11 years.

What does this mean for the issue of consent? It should go without saying, although apparently it does not, that consent to sex with an adult is not at issue for preadolescents. This is not just an arbitrary legal issue. You would be hard put to find a developmental psychologist who would claim that a 6- or 10- or 11-year-old's understanding of sexual relations is sufficiently complex to permit anything approaching informed consent to sexual acts with adults.

However, not only do Rind et al. ignore the absence of reliable age data in concluding from their review that consent is a crucial variable in determining long-term effects of abuse, they go even further and conclude from straight out that *older* children are much less likely to suffer later from sex abuse than *younger* children. How would they know that? In the absence of data, any and all conclusions they reached about the effects of sex abuse being less severe for "consenting" than for "non-consenting" children and less severe for older children than for younger must be drawn from unspecified sources—entirely independent of the "findings in the current review."

What about that last supposedly critical variable, the retrospective reports of these college-aged youths regarding their reactions to their experiences? "The overall picture that emerges from these self-reports is that (a) the vast majority of both men and women reported no negative sexual effects from their CSA experiences; (b) lasting general negative effects were uncommon for men and somewhat more common for women, although still comprising only a minority; and (c) temporary negative effects were more common, reported by a minority or men and a minority to a majority of women" (37). The researchers conclude that a significant number of young people, mostly boys who say that they "consented" to the sex, also say that they do not judge their CSA negatively. Does it necessarily follow that the experience was harmless to them? Of course not.

There is an old saw in the sciences that you cannot prove the null hypothesis. You cannot conclude that "nothing happened" just because you failed to find it. Your measure may be too coarse or too fine, ill-timed, or simply off the mark. It is hard to imagine what could provide a more telling illustration of this principle than the case in point. Attempting to identify harm to children from early sexual experiences by asking 18-year-olds what they think about it is hardly the most appropriate measure, and concluding that the sexual exploitation of children is, in most cases, over the long-term, harmless because some 18-year-olds do not see the harm in it is not only foolish, it is bad science.

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The authors of the studies included in the meta-analysis do variously use measures other than self-reports to assess present levels of functioning, including tests and reports of alcohol use, anxiety, depression, dissociation, and eating and other disorders. But self-reports are central to both the design of the analysis and to its conclusions. The meta-analysis relies on the college sophomores' self-reports as measures not only of positive versus negative assessment of the earlier experiences during the present college years, but of the principal variables of consent versus no consent and positive versus negative responses at the time of the abuse. Rind and Tromovitch themselves coded the fifty-nine studies for these self-reports.

The Rind findings should lead both researchers and the public to seriously challenge the usefulness of any study that relies heavily on self-reports, not just those of teenagers. Self-reports, after all, are notoriously unreliable.

The Rind findings should lead both researchers and the public to seriously challenge the usefulness of any study that relies heavily on self-reports, not just those of teenagers. Self-reports, after all, are notoriously unreliable. Research has shown that it is hard to get anyone to admit to failures, mistakes, and shortcomings.

People tend to overestimate their own contributions to joint efforts, report after an event that they knew beforehand that it would happen, hide feelings of prejudice, overestimate the accuracy of their own predictions, overestimate their actual SAT scores by an average of seventeen points, and even mistakenly report whether they are right or left handed (Kassin 1998). Conducting a study that asks teenagers about their sexual experiences seems particularly fraught with peril, and compounding that error with multiple studies will not improve the reliability or validity of such an error-ridden measure.

In addition to relying on the problematic yardstick of college sophomores' judgments of what was and is harmful to them, the researchers failed to provide enough information about the frequency, severity, or type of sexual acts experienced, or even the gender of the adults(s) to permit readers even to make guesses about what the students might have been thinking when they reported either "consent" or positive reactions to abuse.

Since most of the studies do not distinguish the number of victims from the number of acts of abuse, it is impossible to tell what percentages of individuals made what kind of reports about how many different acts. In the six studies where it was possible to distinguish people from acts, the self-report measure was, essentially, "How's your love life?" One study asked young men to assess the quality of their "adult" sex lives, another asked about their "current" sex lives, and—big surprise!—both questions uncovered only a minority of young men willing to report problems with their collegiate sex lives.

Nor is it possible from the meager data provided by both Rind et al. and the original researchers to tell what kinds of sexual experiences these youths are reporting. As Dr. Laura Schlessinger (the first to bring the Rind et al. study to national attention) noted, studies disproportionately included subjects whose CSA experiences were relatively minor, like exhibitionism, and most of the studies in the analysis did not look to see whether children who experienced severe abuse also suffered more severe consequences. Three-fourths (73%) of the studies included in the Rind et al. meta-analysis included both contact and noncontact sex in their definition of CSA. Unfortunately, only a little more than one-third (35.6%) of the fifty-nine studies contained information on the types of abuse that occurred, with their frequencies. Rind et al. do not report these data but do use them to estimate the prevalence of difference types of abuse generally experienced by children.

Relying on their estimates as indicators of the types of abuse experienced by the children in the studies that comprised the meta-analysis, we can conclude that, overall, about 6% of the children experienced oral sex and 17% vaginal or anal intercourse, attempted or completed. About 70% of the children were subjected only to exhibitionism and/or fondling. (Percentages do not total to 100% because of overlap across groups.) A small minority of studies looked at severity of abuse, defined as levels of duration, force, and/or frequency, and/or the experience of incest and/or penetration. These analyses were performed on 3,859 subjects with many of the children serving as subjects in multiple analyses. (3,859 is less than 11% of the 35,703 children serving as subjects in the meta-analysis.) Thus, the number of children actually examined for effects of the severity of abuse was very small indeed. The failure of researchers to differentiate the type of abuse and to examine the possibility of differential effects as a function of severity essentially equates flashing with forcible sodomy.

Nor is it possible to tell whether the males who report their experiences as neutral or positive are speaking of glimpsing the breasts of a female babysitter or being raped by a male camp counselor, because the research reviewed often failed to specify the gender of the perpetrator and made no distinction between heterosexual and homosexual acts, or between vaginal and anal intercourse.

These numerous information gaps mean that the authors simply did not have the evidence necessary to make the far-reaching and politically provocative conclusions they did.

Meta-mythology

This information vacuum is at least as much a fault of the meta-analysis methodology as of any nefarious design on the part of the researchers.

Meta-analysis is a statistical procedure that can give the modern social scientist with an agenda a highly sophisticated tool for making insubstantial mountains out of statistical molehills. When researchers cannot find a reliable relationship

between some variable they care about and some effect they wish to assign to that variable, they turn to meta-analysis to ferret out the highly desirable—but hidden—connection.

Psychotherapy is a sterling example. Decades of research failed to discern any reliable relationship between psychotherapy and the wellbeing of its countless patients. A great deal was at stake for both practitioners and patients. So mental health practitioners turned to meta-analysis to justify their livelihood and reassure their patients. Lo and behold, a meta-analysis revealed that when numerous types of mental disorders are combined in a single analysis with numerous kinds of psychotherapy, it is possible to detect a very small, but nevertheless statistically significant, positive effect of having been in therapy (Smith and Glass 1977).

Scientists skate on extremely thin ice intellectually and ethically when they attempt to push a social policy agenda, even one supported by reasonably solid scientific evidence, even one pursued with the best of intentions.

However, since meta-analysis combines apples and oranges—as well as peanuts and hamburger along with a dozen different methods of cooking them—it is not possible from the analysis to tell prospective patients anything at all about what kind of therapy might be of benefit to them for what kind of problem, and what might not. Nevertheless, the field happily trumpeted the results, "Psychotherapy works!"

Imagine if medical science were to justify itself by combining into a single analysis of effectiveness every known physical disorder of humankind with every known treatment and concluded that overall there is some tiny, statistically significant, positive effect of seeking medical treatment, but no way of determining whether a specific disorder might respond to a specific treatment. This would not be a strong impetus for increased funding of medical care.

Meta-analysis has a worse fault than skimming over the differences that distinguish apples from oranges. It also is blind to any differences between good apples and bad apples. That an independent variable—cause—is defined carelessly in one study and a dependent variable—effect—measured naively in another makes no difference to the analysis. All the studies, good and bad, are cobbled together with their relative scientific value irrelevant to the combination. However sophisticated the statistics of meta-analytical data dredging, as the early computer programmers observed, GIGO: Garbage In, Garbage Out.

Enough of accepting the questionable practices of the meta-analysis enthusiasts. In real life—outside the abstract world of the statistician—it makes a big difference whether a "statistically significant" result is also experientially significant. In real life, it makes a big difference whether a study has been conducted carefully, thoughtfully, and comprehensively, whether the definitions of the variables of the study are sensible, and whether the measures of effects are, practically speaking, reliable.

In the matter of determining and understanding the long-term effects of childhood sexual abuse, these issues are crucial.

But It Didn't Hurt!

Disregarding all of these flaws of self-report and meta-analytical studies just for the moment, let us assume that it is at least possible that some of these young people are right, that they were not themselves harmed by their experiences. A great many of us know at least one middle-aged male who has said at a cocktail party that he would not have minded being in the shoes of the 13-year-old boy lured into a sexual relationship by his young, attractive teacher in Washington state.

Whether our friend would have minded is beside the point. Whether the child in that case actually minded is beside the point. It is even beside the point whether that particular child was harmed. Society does not have to prove that each and every target of an act is harmed by that act, or even that any specific harm at all flowed from each and every performance of an act, to outlaw it.

Every night, millions of people drive while impaired by alcohol and cause no damage to anyone or anything. That identifiable harm to a specific individual cannot be shown to follow from each and every act of driving while under the influence of alcohol does not lead to the conclusion that drunken driving is harmless. The behavior is illegal because of the unnecessary elevation of the risk of harm to people and property without any demonstrable compensatory need or benefit.

Likewise, it is not necessary to prove that every adult-child sexual relationship results in specific harm to the individual child to conclude that such relationships are too risky for children as a group and too risky for society as a whole to be condoned.

We do not have to ask social scientists for an imprimatur before passing laws to control behavior.

"She blinded me with science . . ."

Scientists, especially those in the health and social sciences, skate on extremely thin ice intellectually and ethically when they attempt to push a social policy agenda, even one supported by reasonably solid scientific evidence, even one pursued with the best of intentions.

Decades of medical research have shown us that even with the seemingly straightforward factual matter of measuring the effects of experimental drugs on specific conditions, the expectations of both researchers and subjects have a huge effect on the outcome of the study. Indeed, recent research has shown

that placebo effects are so strong that there is even some semi-serious talk of both prescribing and regulating sugar pills.

In the social sciences the web of myriad placebo effects is even denser. It is disingenuous to claim that a social scientist's extra-academic life can have no impact on the design of research or the measurement and interpretation of data. The values, social goals, or politics, even the nationality and religion of the individual scientist can—and often do—bias a putatively disinterested scientific investigation. Even the choice of area to be research ed is often driven as much by social-political as by intellectual concerns.

Rind et al.'s "scientific" meta-analysis of the long-term effects of childhood sexual abuse typifies a common problem when social science research is used to drive socio-political agenda—in their case, to reformulate the definition of "child sexual abuse" to exclude putatively consensual sex between adolescents and adults. Gaping empirical lacunae are filled in with items from advocates' wish lists, and authors seem to become blind to the otherwise conspicuous limitations of the scientific data.

Lacking the necessary data on children's ages at the time of the abuse, true "consent" to the experience(s), as well as past and present reactions to the abuse, Rind et al. nevertheless propose a sweeping reformulation of the construct of "child sexual abuse," based on the child's willingness to participate. They write:

> . . . Moreover, the term child should be restricted to nonadolescent children. Adolescents are different from children in that they are more likely to have sexual interests, to know whether they want a particular sexual encounter, and to resist an encounter that they do not want. Furthermore, unlike adult-child sex, adult-adolescent sex has been commonplace cross-culturally and historically, often in socially sanctioned forms, and may fall within the 'normal' range of human sexual behaviors...A willing encounter between an adolescent and an adult with positive reactions on the part of the adolescent would then be labeled scientifically as adult-adolescent sex, while an unwanted encounter with negative reactions would be labeled adolescent sexual abuse. . . .
>
> If it is true that wrongfulness in sexual matters does not imply harmfulness, . . . then it is also true that lack of harmfulness does not imply lack of wrongfulness. Moral codes of a society with respect to sexual behavior need not be, and often have not been, based on considerations of psychological harmfulness or health. . . . The current findings are relevant to moral and legal positions only to the extent that these positions are based on the presumption of psychological harm (46-47).

Rind et al. may well be right that both science and law would be better served with a more differentiated articulation of the definition of child sexual abuse as well as its consequences for young people. Unfortunately, their view is by no means driven by the research findings of their meta-analysis of the existing literature.

Social scientists are not in the business of policymaking and their attempts to do so through the back door of journal article writing should be thwarted. Failure to do so renders a profound disservice to all science.

Congress *is* in the business of policymaking, but it is not in the business of conducting science. The effects of Congressional funding are, of course, enormous for both conduct and dissemination of research, and the hand of Congress is undeniably felt particularly in matters sexual, broadly defined.

But Congress's blanket condemnation of these scientists and the American Psychological Association, their associated scientific organization, for the publication of research findings whose validity was not questioned by the legislators but whose social policy implications were unwelcome, harks us back to Galileo and the Fathers of the Inquisition. If it happens that future research does in fact support the conclusions of Rind, Bauserman, and Tromovitch—and there are certainly hints in current work that that may well be so—then all citizens concerned with the pursuit of truth, not just the scientists, must shout, not whisper, at our legislators, "You may not want to hear it or even know it, but Earth does move around the Sun."

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Date of filing: October 31, 2000. Title: The Skeptical Inquirer. Frequency of issue: Bi-monthly. Complete mailing address of known office of publication: 3965 Rensch Road, Amherst, Erie County, NY 14228-2713. P.O. Box 703, Amherst, Erie County, NY 14226-0703. Publisher: CSICOP, Inc. (Committee for the Scientific Investigation of Claims of the Paranormal), 3965 Rensch Road, Amherst, Erie County, NY 14228-2713. Editor: Kendrick Frazier, 944 Deer Drive NE, Albuquerque, NM 87122. Assistant Editor: Benjamin T. Radford, P.O. Box 703, Buffalo, NY 14226-0703. Owner: CSICOP, Inc. (Committee for the Scientific Investigation of Claims of the Paranormal), 3965 Rensch Road, Amherst, Erie County, NY 14228-2713. P.O. Box 703, Buffalo, Erie County, NY 14226-0703. Known bondholders, mortgagees, and other security holders: None. Aver. no. copies each issue during preceding 12 months: A. Total no. copies (net press run) 54,287. B. Paid and/or requested circulation (1) Sales through dealers and carriers, street vendors and counter sales 20,471 (2) Mail subscriptions 29,874. C. Total paid and/or requested circulation (sum of B[1] and [2]) 50,345 D. Free distribution by mail (samples, complimentary, and other free) 806. E. Free distribution outside mail (by carrier or other means) 0. F. Total free distribution (sum of D and E) 806. G. Total distribution (sum of C and F) 51,151. H. Copies not distributed (1) Office use, left over, spoiled 3,136; (2) returns from news agents 0. Total (sum of G, H [1] and [2]) 54,287. Percent paid and/or requested circulation 98.42%. Actual no. copies of single issue published nearest filing date: A. Total no. copies (net press run) 51,650. B. Paid and/or requested circulation (1) Sales through dealers and carriers, street vendors and counter sales 19,610 (2) Mail subscriptions 28,273. C. Total paid and/or requested circulation (sum of B[1] and [2]) 47,883. D. Free distribution by mail (samples, complimentary, and other free) 800. E. Free distribution outside mail (by carrier or other means) 0. F. Total free distribution (sum of D and E) 800. G. Total distribution (sum of C and F) 48,683. H. Copies not distributed (1) Office use, left over, spoiled 2,967; (2) returns from news agents 0. Total (sum of G, H [1] and [2]) 51,650. Percent paid and/or requested circulation 98.36%.

Why Paranormal Beliefs Are So Popular and Skepticism So Unpopular

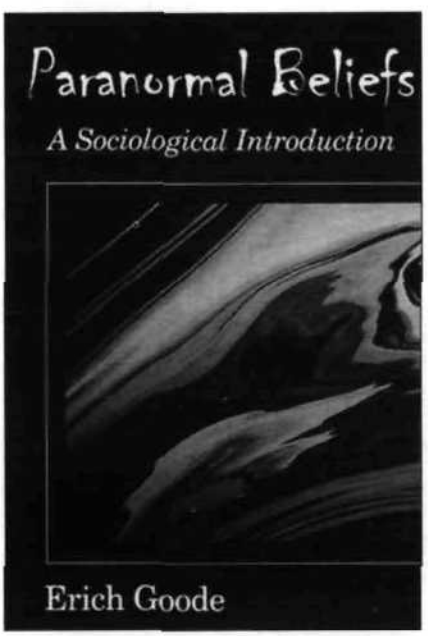
JEFFREY S. VICTOR

Paranormal Beliefs: A Sociological Introduction. By Erich Goode. Waveland Press, Prospect Heights, Illinois, 2000, ISBN 1-5776-076-5. 310 pp. Softcover, $17.95.

Sociologist Erich Goode's book should be read by anyone who wonders why so many people believe in paranormal phenomena. Readers who are familiar only with psychological studies of paranormal beliefs will find this book to be refreshingly different. Goode's sociological analysis is a useful antidote to psychological reductionism, which seeks to explain the persistence of paranormal beliefs exclusively on the basis of individual personality characteristics. This is the first summary and integration of sociological research on beliefs in paranormal phenomena.

Goode defines "paranormal" as "Events, phenomena, or powers that scientists regard as contrary to the laws of nature" (18). He notes that "Paranormal claims or stories invoke or make use of forces, factors, dynamics, or causes that scientists regard as inconsistent with a satisfying, naturalistic or materialistic, cause-and-effect explanation" (18). Goode's study focuses upon four forms of paranormal beliefs: astrology and psychics, creationism, parapsychology, and the belief that UFOs are real.

Goode organizes his study around certain essential questions. What causes the persistence and popularity of paranormal beliefs? Why do paranormal beliefs persist, despite increasing levels of education, technological modernization and the dominance of the scientific belief system in society? Conversely, why does skepticism of the paranormal have such little popular appeal? The answers challenge the preconceptions of some skeptics that paranormal beliefs persist due to ignorance, irrational thinking, and inadequate science education. (I'll say more about these questions later.)



Goode's sociological analysis presents paranormal beliefs as socially "deviant" alternatives to the culturally dominant scientific belief system. "Deviant" means that the beliefs are widely disapproved as being wrong, eccentric, or fraudulent, especially by scientific authorities. (As a sociologist, Goode is a prominent specialist in the study of social deviance and collective behavior.) He employs a social constructionist perspective, which studies the social forces that lead people to arrive at their beliefs about reality (the truths that people assume about the nature of the world in which we live). As a social constructionist, he avoids judgments about people's beliefs about reality in order to genuinely and empathetically understand their beliefs. Therefore, he views scientific and paranormal beliefs simply as two contradictory belief systems competing for adherents, much like two different political or religious belief systems. The issue of whether or not paranormal beliefs can be verified by scientific, empirical research methods is held in abeyance as a secondary concern.

Some skeptics of paranormal beliefs may be disturbed by Goode's even-handed, nonjudgmental analysis of

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paranormal beliefs. Goode's goal is to understand rather than to debunk such beliefs. Yet this is exactly the goal that scientific investigators of beliefs in paranormal phenomena must hold, whether or not they disapprove of such beliefs. Goode suggests that skeptics of paranormal beliefs should follow the same prescriptions that they demand of believers in paranormal phenomena—to conduct careful, empirical research to test their assumptions. More specifically, he cautions skeptics to avoid jumping to conclusions about believers in paranormal phenomena, without adequate scientific evidence.

A social constructionist study of paranormal beliefs focuses investigation upon how such beliefs are communicated and publicized in society, supported by the money and power of particular social groups, and learned by each new generation. Paranormal (and scientific) beliefs are socially constructed and not simply products of innate mental processes, in isolation from the world of people.

To come to conclusions about reasons for the popularity and persistence of paranormal beliefs, Goode examines research on social group variations in paranormal beliefs, their relation to religious beliefs, their dissemination in the mass media, and their involvement in politics and social movements. Goode notes, for example, that the cognitive processes leading to paranormal beliefs are promoted by certain religious groups to attract members, and by the entertainment media to make money.

Goode concludes that there are several sociological reasons for the persistence of belief in paranormal phenomena.

First, paranormal stories and explanations are much more dramatic and entertaining than are scientific explanations for most people, regardless of their educational level. Scientific explanations are frequently abstract, complex, and boring for nonscientists.

Second, paranormal stories and explanations embody very ancient and enduring symbolism and themes relative to everyday hopes and fears, aspirations and anxieties. Many of these everyday concerns are matters that science does not and cannot address.

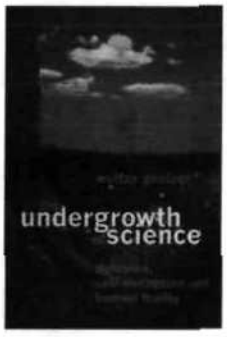
Third, most paranormal beliefs support anti-elitist sentiment against the dominance of scientists and the scientific belief system. Scientific truth is not one in which everyone's personal "truth" is on an equal footing, and the community of scientists is structured around a prestige hierarchy of authorities. In contrast, paranormal "truths" are personal and accessible to everyone.

Fourth, the dissemination of paranormal beliefs brings benefits to many diverse groups in society, sometimes in the form of income, or by increasing membership strength, or by gaining influence.

Goode's study questions a commonly held assumption among skeptics that by providing more and better science education in schools, the general public will abandon their beliefs in paranormal phenomena. I personally agree. As a college professor, I can't see how a year or two of college biology or chemistry will "convert" a person to the scientific way of thinking.

In this regard, Goode's study also presents comparisons between scientific and paranormal epistemology and belief systems. He explains how believers in the paranormal and scientific skeptics arrive at their conclusions via very different and incompatible ways of thinking. Most important, the believers' way of thinking is consistent with the everyday ways of thinking of most people, while that of scientists is not easily acquired and must be learned through disciplined effort. This is another reason why belief in the paranormal can be expected to persist far into the future.

Goode's writing avoids sociological jargon and is accessible to anyone with some college education. He presents fundamental epistemological assumptions about how and why people believe what they believe in an easily readable manner. The book's extensive references can also be a valuable resource.



A Look at the Underside of Science

TOM NAPIER

The Undergrowth of Science. By Walter Gratzer. Oxford University Press, 2000. ISBN 019-850707-0. 328 pp. Hardcover, $27.50.

It might seem odd that the Oxford University Press should publish Walter Gratzer's *The Undergrowth of Science* within months of publishing Bob Park's *Voodoo Science* [reviewed in SI, July/August 2000] since at first glance they are both concerned with scientific delusions. As it turns out, though their contents overlap, these books are quite different in aim and style.

Park's book discusses aberrations of science without regard to their source. Crackpots and hucksters with no knowledge of science are tarred with the same brush as professional scientists who have let their critical guard slip. This is useful since it is the crackpots who have more direct influence on the public and are more likely to do actual physical or monetary damage. There is no establishment checking and correcting their results as there is within the

Tom Napier, a former physicist and engineer, has been a long-time skeptic. He helped found the Philadelphia Association for Critical Thinking and edited its newsletter for five years.

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formal sciences. The media mostly ignore crackpots. Only the skeptical movement (and, very rarely, the law) comes between the gullible public and the crooks, nuts, and charlatans who prey on them. By exposing crackpots to fierce ridicule Bob Park performs a public service.

Gratzer, by contrast, is mainly concerned with the follies of professional scientists. His book is more serious and thorough than Park's; his prose more stolid, albeit leavened by occasional flashes of wry humor. While accessible to a lay audience—tricky points of science are explained in endnotes—this is a book as much for the historian of science as for the skeptic. Unlike *Voodoo Science, Undergrowth* is no call for action. With the exception of cold fusion (which still counts a dwindling handful of die-hard supporters) and homeopathy, the cases Gratzer addresses are dead and gone. Despite his similarity to Tesla, Blondlot of N-ray fame has attracted no latter-day disciples.

The classic lapses of twentieth century science are covered in detail. N-rays, polywater, and cold fusion each have their own comprehensive chapters. Mitogenic rays, the midwife toad, and the flatworms that acquired memories through cannibalism share a chapter. Irving Langmuir rates his own chapter, not as a kook but as a physical chemist who investigated odd scientific claims. He is remembered for Langmuir's rules, criteria to distinguish pathological science from real science.

As Gratzer says, "High intelligence and learning do not always exclude unreason," a sentiment with which I wholeheartedly agree. This remark heads the only chapter that discusses the paranormal and mentions a few nonscientists. Mesmer's "animal magnetism" rates several pages, as do Crosse's nineteenth century claims that electrolytic cells created living creatures. Rhine's parapsychology research gets a passing mention and exposés by Martin Gardner, the SKEPTICAL INQUIRER, and James Randi get due credit. How John Taylor was fooled by "telekinetic" schoolchildren is also described and the page or two about Uri ("I am not a magician") Geller will no doubt draw the ire of that litigious gentleman. (Geller has been recently granted British citizenship and now wishes, according to his letter in *The Times* on September 8, to be known as "the alien Uri Geller.")

Fans of homeopathy will probably be dismayed to see it lumped with such medical oddities as phrenology and the implanting of monkey glands. As least homeopathy, if not efficacious, is safer than the formerly fashionable imbibing of ultimately lethal doses of radioactive compounds—the appalling death of socialite Eben Byers is cited—or the equally fashionable and destructive lobotomy fad.

In the second half of his book Gratzer turns to the links between science and politics, how political ideology has influenced what research is acceptable and how bad science has been used to justify government policy. An amusing chapter reveals the influence of chauvinism. The N-ray affair continued longer than it should because dissenting work by German scientists could be ignored; only French scientists had the necessary sensitivity to observe N-rays. (How like today's therapeutic touch and dowsing debates where skeptics are scorned for lacking the ability to sense what is, after all, not there.)

The Germans, for their part, denounced "Jewish" science and, much to their later cost, forced the emigration of some of the best German scientists. The scientific aberrations of the Third Reich are discussed in some detail, as is the effect on agriculture in Stalin's USSR of the dictum that only the inheritance of acquired characteristics, as postulated by Lamarck and Lysenko, was compatible with Marxist philosophy.

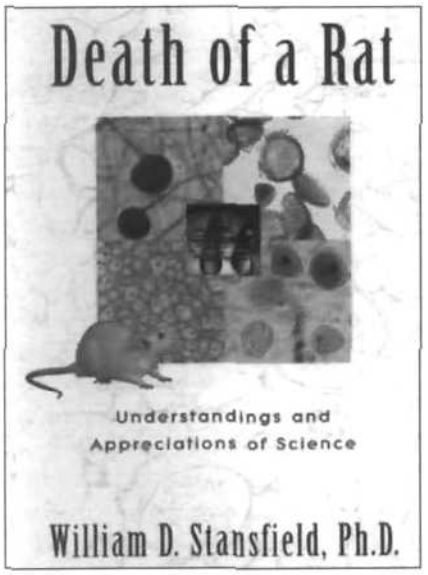
Gratzer's final chapter discusses *eugenics*, Sir Francis Galton's word for the idea that if human characteristics are largely inherited, then it pays society to select for desirable characteristics rather than letting unselective breeding take its random course. This essentially reasonable idea has become so mired in controversy and so confused with racism that it is now difficult to discuss it rationally.

Unfortunately, the early enthusiasts for eugenics were blinded by their prejudices. They encouraged forcible sterilization of the "unfit" and categorized infectious diseases such as tuberculosis and syphilis as heritable traits. Hitler's Germany used the banner of eugenics to justify the widespread sterilization or elimination of undesirables. It encouraged SS officers to have many children, provided their brides were acceptable to the SS Race Office. Lamarckism protected the USSR from similar measures; after all, if heredity was a myth, better breeding could have no effect.

Today, Gratzer asserts, eugenics is a dead issue except in China. He categorizes it as pathological science yet acknowledges that the nature versus nurture question is still being debated, but with positions based more on politics than on the scientific facts. As he says, the issue may never be resolved. I would add that if we shy away from it, it never will be. Our increasing ability to detect genetic problems *in utero* means we can no longer sweep this topic under the rug.

At the end of the book Gratzer draws the unremarkable conclusion that even scientists can err or lose their objectivity. He fails to note that his entire book confirms that science as an institution is self-correcting. Scientists have an obligation to submit their discoveries to peer review and replication. In every case Gratzer mentions, individual scientists have erred but their fellow scientists have detected and corrected these errors without outside intervention. Thus I would have drawn the stronger conclusion that, through this process of mutual criticism, reason ultimately triumphs. Gratzer reveals the failures of individual scientists but attests to the strength of science as a whole. □

Listing does not preclude future review.



Death of a Rat: Understandings and Appreciations of Science. William D. Stansfield, Ph.D. Prometheus Books, 59 John Glenn Drive, Amherst, NY 14228-2197. 2000. ISBN 1-57392-814-3. 360 pp. Hardcover. $29. A popular overview of the major ethical and philosophical issues facing science today. "The Frankenstein Model" considers such thorny issues as human experimentation, fetal cell research, and animal rights. "Dance Fever" shows how a "paradigm hold" (e.g., bee dance language) can redirect scientists away from giving alternate theories a proper test. "Grand Illusions" looks at enticing scientific ideas like cold fusion that sometimes lead scientists down the wrong path. "Strange Bedfellows" traces the influence of religion and politics on the advance of science and on science education. "Brainstorms" asks how are things discovered and where do great ideas in science come from? Other chapters explore a variety of other issues.

Did Adam and Eve Have Navels? Discourses on Reflexology, Numerology, Urine Therapy, and Other Dubious Subjects. Martin Gardner. W.W. Norton & Co, Inc., 500 Fifth Ave., New York, NY 10110. 2000. ISBN 0-393-04963-9. 333 pp. Hardcover. $26.95. Twenty-eight lively Gardner essays, all but one from his columns in the SKEPTICAL INQUIRER. They're grouped into ten topics: evolution versus creationism, astronomy (The Star of Bethlehem), physics (the egg-balancing mystery), medical matters, psychology (Freudianism, Jean Houston), social science (Alan Sokal's Hilarious Hoax, Carlos Castaneda), UFOs (Courtney Brown, Heaven's Gate), more fringe science (Temple University's Center for Frontier Sciences), religion, and The Last Word ("Science and the Unknowable.") Even if you read them in the original version, you will find Gardner's Addendums (some quite extensive) to almost every essay well worth reading for updated information, reactions to the original, and his responses.

Einstein's Brainchild: Relativity Made Relatively Easy! Barry Parker, Ph.D. Prometheus Books, 59 John Glenn Drive, Amherst, NY 14228-2197. 2000. ISBN 1-57392-857-7. 280 pp. Hardcover. $28. Physicist and science writer Barry Parker here attempts to speak to the broadest possible audience in bringing Einstein's theories to life. Last year *Time* magazine named Einstein "Person of the Century," and Parker thinks it fitting to dedicate a book to explaining in the clearest possible terms the meaning and beauty of Einstein's theories. Illustrated with numerous line drawings and cartoons.

From the Wandering Jew to William F. Buckley Jr.: On Science, Literature, and Religion. Martin Gardner. Prometheus Books, 59 John Glenn Drive, Amherst, NY 14228-2197. 2000. ISBN 1-57392-852-6. 300 pp. Hardcover. $27. A new collection of Gardner essays and reviews other than those published in the SKEPTICAL INQUIRER (although one SI piece, "*Life Magazine* and Astrology," does appear). Most, as he says, "are mainly attacks on bogus science and what I regard as religious superstition." Among the books reviewed are Carl Sagan's *The Demon-Haunted World*, Susan Blackmore's *The Meme Machine*, Paul Edwards' *Reincarnation*, and Reuben Hersch's *What is Mathematics, Really?* Other topics include Frank Baum's Oz books, Lewis Carroll, H.G. Wells, and Hugo Gernsback. Gernsback's magazine *Science and Invention* was one of Gardner's great delights as a boy, and Gardner calls him not only the Father of American Science Fiction but one of the nation's great science popularizers.

Sasquatches From Outer Space: Exploring the Weirdest Mysteries Ever. Tim Yule. Illustrated by Keith Baxter. Prometheus Books, 59 John Glenn Drive, Amherst, NY 12448-2197. 2000. ISBN 1-57392-847-X. 130 pp. Softcover. $15. Who says skepticism can't be fun? Tim Yule, an elementary school teacher, explores strange and funny mysteries and teaches how, through simple hands-on experiments, to get to the bottom of the tall tales. For young people. Along the way, they should pick up a fair doses of critical thinking and appreciation for finding solutions. Topics include astrology, Bigfoot, the Bermuda Triangle, ESP, crop circles, the Loch Ness Monster, vampires, UFOs and aliens, and "cool Web sites for more information." Cartoon illustrations throughout.

The Sokal Hoax: The Sham That Shook the Academy. Edited by the editors of *Lingua Franca*. 2000. ISBN 0-8032-7995-7. 288 pp. Softcover. $20. Can be ordered at http://unp.unl.edu/scripts/Cart/smart.pl?command=listitems&ID=3934&tmp=1. In May 1996 New York University physicist Alan Sokal revealed that he had tricked the editors of the fashionable academic journal *Social Text* into publishing a sham essay titled "Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity." The essay was a parody of postmodernist thought intended to demonstrate how little contemporary theorists and philosophers like Jacques Derrida understand the science they invoke and criticize. The Sokal Hoax instigated a scandal both inside and outside the academy that has had an enormous impact on scholarship and is still debated today. Collected here for the first time are the most significant articles, essays, letters, e-mail exchanges, and forums that have responded to and tried to make sense of the hoax. The original essay from *Social Text* is included as are news stories and commentaries from the US and abroad. There are further responses from Alan Sokal and the editors of *Social Text*.

Test Your Science IQ. Charles J. Cazeau. Prometheus Books, 59 John Glenn Drive, Amherst, NY 14228-2197. 2000. ISBN 1-57392-851-8. 350 pp. Softcover. $20. Can water in the ground be located by water witching? Why do scientists say we evolved from a monkey? What is the most nutritional fruit? Is there any historically certified Garden of Eden on Earth? Is there any natural explanation for the parting of the Red Sea during the Exodus of Moses and the Israelites? Where did Grimm get his ideas for the fairy tales children still read? Are there genuine cases of demonic possession? Is there any scientific basis for telling the future by reading a person's palms? These are just a few of the more than 450 intriguing science questions, from the profound to the amusingly trivial, Cazeau addresses in this fun, informative book.

—Kendrick Frazier

Aftergood, Steven. "Polygraph Testing and the DOE National Laboratories." *Science* 290: 939–940, November 3, 2000. "Most scientists who have studied polygraph testing are deeply skeptical of its usefulness in screening employees as a way to enhance security. However, many security professionals have an equally profound commitment to the polygraph and view it as an indispensable counterintelligence tool. The collision between these two views, accelerated by a congressional mandate that required polygraph testing for certain employees, has arguably diminished both science and security at the weapons labs of Los Alamos, Livermore, and Sandia National Laboratories, which are all supported by the Department of Energy (DOE)." This is the lead of a timely Science and Society essay by Aftergood, a senior research analyst with the Federation of American Scientists.

Lerner, Lawrence S. "Good and Bad Science in US Schools." *Nature*, 407: 287–90, September 21, 2000. "One-third of US states have unsatisfactory standards for teaching evolution," says Lerner, who conducted a nationwide study on academic evolution standards. He ranked six states with an unsatisfactory D and thirteen with an F or worse. The US is the only country worldwide that does not treat evolution as routine, which Lerner says has nothing to do with science but rather with religion and politics. His full report—which contains a complete analysis of each state's ranking—can be obtained from the Thomas B. Fordham Foundation in Washington, D.C. at 202-223-5452 or from www.edexcellence.net.

Loftus, Elizabeth. "The Most Dangerous Book You May Already Be Reading." *Psychology Today*, November/December 2000, pp. 32–35, 84. In a plea to save patients unwarranted trips to a therapist, Loftus, a psychology professor at the University of Washington, cautions readers about Marlene Steinberg's controversial new book *Stranger in the Mirror: Dissociation: The Secret Epidemic of Our Time*. Steinberg claims that 30 million Americans suffer from Dissociative Identity Disorder (DID), associated with a repressed traumatic experience, which she says causes the victim to ultimately develop alternate personalities. Steinberg claims a high success rate among her patients but gives no documentation. Loftus is also skeptical about Steinberg's self-proclaimed "breakthrough diagnostic tool" (SCID-D), which shows no scientific validity. At the end of this article Steinberg responds.

Weiss, Peter. "Breaking the Law: Can Quantum Mechanics + Thermodynamics = Perpetual Motion?" *Science News*, 158: 234–5, 239, October 7, 2000. Controversial new proposals that challenge the laws of thermodynamics have been introduced by several groups of scientists and have many physicists skeptical. These groups propose "that the peculiarities of quantum mechanics permit what seems to be violations of one of the fundamental laws—at least on a microscopic scale." Weiss says that "if verified, the new findings . . . might indicate that a certain class of perpetual motion machines is, in fact, possible." He warns that even if these findings prove significant, "the practical consequences could still prove minuscule." Physicists are skeptical because these findings have "yet to be put to the test in working devices."

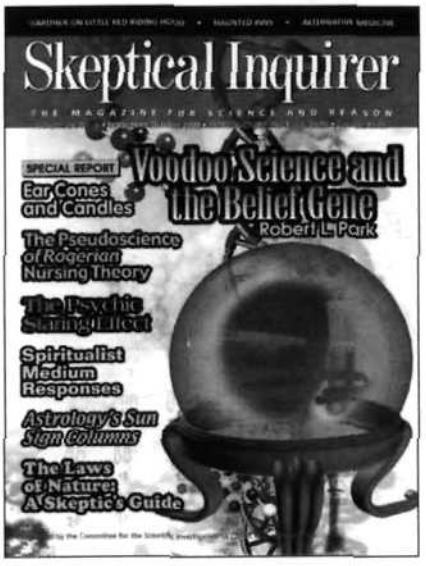
—Jodi Chapman

SCIENCE BEST SELLERS

Top Ten Best Sellers in **New York**

1. ***The Code Book: The Evolution of Secrecy from Ancient Egypt to Quantum Cryptography***
   Simon Singh
   Anchor Books
2. ***The Island of Lost Maps: A True Story of Cartographic Crime***
   Miles Harvey
   Random House
3. ***The Elegant Universe: Superstrings, Hidden Dimensions, and the Quest for the Ultimate Theory***
   Brian Greene
   Vintage Books
4. ***Genome: The Autobiography of a Species in 23 Chapters***
   Matt Ridley
   Harpercollins
5. ***A Brief History of Time***
   Stephen Hawking
   Bantam Doubleday Dell Pub.
6. ***Human Natures: Genes, Cultures, and the Human Prospect***
   Paul R. Ehrlich
   Island Press
7. ***To Engineer Is Human: The Role of Failure in Successful Design***
   Henry Petroski
   Vintage Books
8. ***Just Six Numbers: The Deep Forces that Shape the Universe***
   Martin J. Rees
   Basic Books
9. ***Failure Is Not an Option: Mission Control from Mercury to Apollo 13 and Beyond***
   Gene Kranz
   Graphics Press
10. ***Galileo's Daughter***
    Dava Sobel
    Penguin USA

By arrangement with Amazon.com, November 2000.


Skeptical Inquirer
THE MAGAZINE FOR SCIENCE AND REASON
SPECIAL REPORT
Ear Cones and Candles
Voodoo Science and the Belief Gene
Robert L. Park
The Pseudoscience of Rogerian Nursing Theory
The Psychic Starring Effect
Spiritualist Medium Responses
Astrology's Sun Sign Columns
The Laws of Nature: A Skeptic's Guide

Rogerian Nursing Theory

Jef Raskin's article on Rogerian nursing theory (September/October 2000) is very accurate, and given the current acute shortage of nurses in most areas of the country, is also timely. That such babble as Rogerian theory should become so pervasive is understandable.

In 1950, the majority of nursing schools were of the "hospital school" variety, with many of them run by religious orders. They were an inexpensive means for a young woman to obtain a set of skills that would *give her a great deal of financial independence* and autonomy, but they were also resented by their students for a variety of reasons, most of which had nothing to do with nursing.

Some of the restrictions placed on the student nurses were just silly. Open-toed dress shoes worn off-duty could get a gal suspended, as could a strapless evening gown. No social life; she got married, she got thrown out of nursing school! Not that they had many opportunities for such sloth, especially in one's first year: students resided in dormitory *facilities attached to the hospital and curfews* were early and strict. . . .

In the 1960s, the support for the old-style diploma-granting, hospital-based institutions began to crumble. By the time I entered nursing school in 1975, the handwriting on the wall was clear: the old schools were going down and the university degree was going to be the standard for entry into the profession. I was a student nurse in one of the last classes to graduate from one of the hospital schools.

There was also intense resentment of the attitudes expressed toward nurses and nursing by other health professionals, especially *physicians. The latter clung stubbornly to* the long-outmoded image of airheaded little "nursie" tiptoeing along behind His Majesty as he made hospital rounds, carrying his stethoscope on a silken pillow. We guys, sorry to say, experienced a lot less of this—the doctors could never quite figure out why a man would want to go into nursing. And they didn't often ask; many of us are big enough to be intimidating! . . .

The nursing profession as a group well understood the low opinion other professions had of them. Casting about in desper*ation, some came up with a variety of novel* ideas meant to enhance nursing's image. Rogerian theory is not unique, it's just the one that happened to catch on. Another idea that was floated during my student days to make the idea of nursing as a profession acceptable was for nurses to begin to do nursing research.

Jef Raskin suggests that nurses ought to do it, but there's a problem. Nurses are not trained researchers. Besides having little more than an abbreviated introduction into the ways and means of research in col*lege (and not all colleges and universities* offer even that) few of them have a solid grasp of scientific theory. Adding sufficient preparation in that discipline to an already heavy academic load would necessitate much higher costs to a basic nursing education and probably add another year to the time required.

Not only is there no consensus regarding exactly what "nursing research" should consist of, the returns to the individual nursing student and the profession simply aren't enough to justify all the extra work *and struggle. I can put it in very personal* terms: a graduate nurse makes less, with his or her four-year degree, than a Postal Service letter carrier, who needs no formal education beyond high school. And the "benefits" such as health insurance and retirement that are available to nurses are laughable when placed alongside those the letter carrier is entitled to.

Rogerian theory was and is an unfortunate reaction to a perception that is only partly based in reality. That so many good, caring people have allowed themselves to be *seduced by its pseudoscience is a continuing* embarrassment. Nursing deserves better.

William D. (Bill) Mayers, RT, RN
St. Joseph Hospital School of
Nursing class of '78
Canastota, New York

Laws of Nature

In his "Laws of Nature: A Skeptic's Guide" (September/October 2000) Professor Pazameta described one them as the "Law of Entropy." His final conclusions are generally correct. However, his warnings about the difficulty of entropy—and the serious misconceptions that he leaves with readers—arise mainly because of his mixing "order" and informational "entropy" with classical thermodynamic or Boltzmann-Planck statistical entropy, the only word for entropy that needs no quotation marks. Entropy is simply like a ruler, a counter, an indicator of energy change in a system of matter and energy (or of energy alone) as predicted by the second law of thermodynamics. Entropy, because it is the measure of the second law, is always associated with energy.

Informational "entropy" is sadly misnamed. Shannon's superbly general mathematical function, so useful in communication theory and in many math relationships, was jokingly named "entropy" at the suggestion of John von Neumann (*Scientific American*, 225: 180, *1971*). Adopting that word without quotes has cruelly misled generations of younger students and nonscientists since then because informational "entropy" is not thermodynamic entropy; informational "entropy" *has no integral or required relation to energy* and thus, without lengthy explanation, cannot be conjoined with thermodynamic entropy in a popular discussion.

"Order" among atoms and molecules was a useful crutch for evaluating thermodynamic entropy change by Boltzmann in the *1870s*. In contrast, because Boltzmann distributions could be attributed to microenergetic quantum states since the 1930s, it has long been misleading even as a crutch for entropy: Students (and some instructors and texts) misuse it so much as to extend entropy change to shuffled cards, messy desks, and disorderly dorm rooms. The disorderly arrangement in macro objects such as these is not an indication of an increase in thermodynamic entropy *in them* from some initial "more ordered" state. Any entropy change in the process occurs *in the agent or energy source that* moves them.

Frank L. Lambert
Professor Emeritus (Chemistry)
Occidental College
Los Angeles, California

In his article "The Laws of Nature," Zoran Pazameta says, "However small this waste may be, it is never zero—that is, no natural or man-made process can ever be 100 percent efficient." If the process in question is to produce heat, can't it be 100 percent efficient?

In his book *The Fabric of Reality*, David Deutsch says, "This property is related to the second law of thermodynamics, which states that ordered energy, such as chemical or gravitational potential energy, may be converted *entirely* into disordered energy, i.e., heat, but never vice versa" (emphasis added) (p. 286, paperback). This may be a finer point that Professor Pazameta wanted to consider in his "Skeptic's Guide."

Allan D. Halderman
Oregon City, Oregon

Testing the Staring Effect

The excellent article by David Marks and John Colwell on the staring effect (September/October 2000) contained one factual error and a missing control condition. The statement that Sheldrake introduced ". . . a radically new theory of perception" is not quite correct. The idea that images are an outward projection of the mind through the eyes of the observer was first proposed by Johannes Kepler almost 400 years ago.[1] More recently, Dale Dickson, Giovanni Misceo, and myself[2] suggested that the conscious extent of an image (say, the redness of a rose) is a phenomenological projection to some distant point from the observer. I hasten to add that we did not suggest that the projections is through the eyes, as Kepler and Sheldrake would have it, but rather the illusion of the rose's redness located at the position of the distant rose is probably determined by afferent and/or efferent signals of the nervous system.

As for the missing control condition, there are two different kinds of controls one could use to demonstrate that a pseudo-random procedure is responsible for Sheldrake's results: The first, used by Marks and Colwell, eliminates the pseudo-random procedure, replacing it with a truly random presentation, under conditions of staring, with the expectation of chance results. This expectation was met.

The second, not employed by Marks and Colwell, but one which would have really made their case, would be to keep Sheldrake's pseudo-random order but eliminate the staring (unbeknownst to the subjects). If Sheldrake's results were due to the pseudo-random order as Marks and Colwell suggest, then Sheldrake's results would have been replicated in the absence of staring.

Thaddeus M. Cowan
Emeritus Professor of Psychology
Kansas State University

1. See Kaufman, Lloyd. 1974. *Sight and Mind.* New York: Oxford University Press. pp. 278–281.

2. Cowan, T.M., D.R. Dickson, and G. Misceo. 1998. Efference and the extension of consciousness. In Scott Jordan, Ed. *System Theories and A Priori Aspects of Perception.* New York: Elsevier.

Ear Candling, and More

Bravos to Philip and Justin Kaushall for their daring experiments on ear candling ("On Ear Cones and Candles," September/October 2000). I'm sure I would hesitate to put a hollow, burning candle in my ear. In replications, the use of an otoscope to visualize the wax (or lack thereof) in the ear canal pre- and post-testing might prove to make results even more convincing.

Let it never be said that alternative medicine practitioners leave an orifice uncleansed, and we can only hope that the courageous Kaushalls will further expand their expertise in the arena of orifice candling. I think I am on safe ground saying that the practice of "Butt Candling" (http://buttcandle.mutate.net/index.cgi?op=Home) has been relatively free of investigation. Working on the same principle as ear candling, a "vacuum will be created within the rectum and thereby draw out the stubborn fecal material."

Butt candles, however, come with extra long matches.

Linda Rosa, RN
Loveland, Colorado

The Elián Case

The September/October SKEPTICAL INQUIRER was well worth reading from cover to cover. However, I was especially pleased with Joe Nickell's comments on the Elián Gonzalez case. Whatever one's feelings about the political ramifications of this extended drama, the religious aspects should be seen in their true light. Television showed grandstanding by Elián's Miami family and its supporters combined with near-hysterical displays from the most fervently religious members of the Cuban expatriate community.

Was Elián a miracle child? Certainly his survival on the water was fortuitous. But if events had been truly miraculous, wouldn't the entire group of refugees have made it to the United States? According to the prayers of the Cuban exiles, shouldn't the "divine intervention" that saved him from death also keep Elián in the U.S.? Yet it didn't happen that way.

Again, many thanks to the tireless Mr. Nickell.

Kevin M. Wolf
Somerville, Massachusetts

Little Red Riding Hood, Sex Symbols, and Fairy Tales?

Martin Gardner in "Little Red Riding Hood" (September/October 2000) skeptically chided psychoanalysts for reading psychological and sexual meanings into fairy tales. How could he ignore all the sex and violence known to have been "read out" or scissored out instead of "read in"?

Gardner touched on this briefly in mentioning Perrault's French version of Little Red Riding Hood published in 1697. The wolf disguised as granny persuades Little Red to undress and climb into bed. In the later (1812) German version published by the Brothers Grimm, the girl stands by the bed and stays clothed.

That was far from the only bowdlerizing. In the earlier centuries-old version of another story, the prince does much more than just kiss Sleeping Beauty. Then she gives birth and her child jostles her awake. That early edition also contained adultery and attempted cannibalism. The prince is married and the jealous wife attempts to devour Beauty cooked but, through a deception, the dish contains only goat stew.

The bachelor-prince/just-a-kiss edition published by the Grimms is the sanitized one known today but the brothers were censored also. In the story of Rapunzel, the prince climbs her long, golden hair to visit her in the tower where she is held captive. According to Jacob and Wilhelm Grimm, she gives birth to twins while in the tower. Check the children's section of your local bookstore and you will find that in most rewrites the twins have disappeared.

According to the Brothers Grimm, the huntsman who is supposed to kill Snow White fools the wicked queen by bringing back the heart of a young boar. The queen has the heart salted and cooked, then eats it.

In the Disney cartoon and various rewrites, he shows her the heart but no luncheon follows. In even prissier versions, he just tells her he did it.

Snow White's wedding ball concludes the story. The wicked queen is forced to wear white-hot iron shoes and to dance around in them until she drops over dead. In post-Grimm or not-so-Grimm revisions, Disney kills her off sans torture with a bolt of lightning. In Classic Comics, she goes insane and runs raving into the forest. A children's stage version has her imprisoned in the magic mirror. Anything to avoid a hot-tootsy tapdance that surely must have been the life of the party.

According to the Brothers Grimm, Cinderella's wicked stepmother takes a kitchen knife and cuts a big toe off of each bad stepsister so the glass slipper will fit. Trickling blood exposes the trick. During Cinderella's wedding, the two limpers get their eyes gouged out by mystical birds. In Disney, the bad stepsisters end up grumpfaced but unharmed. At Dalton's and Waldenbooks, Cinderella marries them off to lesser nobles.

In some storybook illustrations, Hans Christian Andersen's "Little Mermaid" is bare-breasted like the bronze statue in Copenhagen. In others, she wears two oyster shells as a bikini top. Look how much is done to protect children from being unsettled by anything stronger than Porky Pig and Captain Kangaroo. No morning sickness for Rapunzel. No fry pan booties for the queen. Perhaps the psychoanalysts who "read in" are just putting back what Miss Grundy and Reverend Scissorhands have cut out.

Greg Donio
New York, New York

I read with great delight Martin Gardner's column on the interpretations of Little Red Riding Hood. I was particularly amused by the various sexual or otherwise profound symbolisms given to the color of her cape and hood: Red. I am a costume designer and maker and am particularly fond of the eighteenth century. I have noticed over the years of making and researching women's clothes of that century that red wool cloaks were very common. Now, my goal is to make costumes, not to document the colors of outer wear, so I didn't know for sure, but I had a notion that a red riding hood was a very common garment. So I asked my learned colleagues on the Historic-Costume mailing list what they thought. Why a *red* riding hood? Here are some replies:

> Just because the color red was associated with sexuality by the upper middle classes by the time Freud was writing doesn't mean that it always had that meaning. For a long time green was associated with uncontrolled sexuality because of the idea of impulsive intercourse on the grass which would give a woman a "green-gown." Red wool for cloaks and red flannel for petticoats are very common in the eighteenth and early nineteenth centuries with the working classes.
>
> Well, I'm no psychologist but if I had to hazard a guess (why red cloaks are common), I would say that maybe the reason is the same as today. In the cold dark dreary *months of winter, it's good to have some*thing red to cheer you. It contrasts so well with the grey skies, the black trees and the white snow. We have red in abundance at Christmas and at Valentine's Day, which covers the worst of the year. In almost all the high-end fashion lines, red is a staple of winter.
>
> I had always heard that it was a psychological feeling that since red is a warmer color, garments that were meant to keep someone really warm were red in color, i.e., capes and bloomers.
>
> And what about safety? Hunters, at least in the U.S., wear "Blaze Orange" clothing so they can be seen, and not shot, by other hunters. Also, when traveling in the snow, red clothing may make the difference between freezing to death or being found by rescuers.
>
> According to "War in Britain" by Tim Newark (*English Heritage*, HarperCollins, 2000), red and blue were the favored colors for uniforms because they only need one stage of dyeing, and were therefore cheapest.

So you see, a red cloak and hood in the eighteenth century (and earlier) signifies very little indeed . . . except perhaps to show Little Red Riding Hood's social status as being lower or middle class.

Isn't it wonderful how the investigation of even a simple children's fairytale can draw in so many seemingly unrelated disciplines and illuminate life and thinking in the eighteenth, nineteenth and twentieth centuries.

Gray Hunter
Wilmington, North Carolina

As usual, Martin Gardner's report—this one on the prepubescent *femme fatale* Little Red Riding Hood—was much appreciated. To correct a trivial (but entertaining) point, I would suggest that Mr. Gardner may have been off base when, in reference to Sam the Sham's song, he stated that the tune ends with Sam repeating "I mean baaaad!" What I hear is an allusion to a wolf in sheep's clothing; subsequent to his letting out a wolf howl, what Sam says is, I mean, "Baaaaa!" The singer is admitting to the listener that he is feigning the innocence of a lamb in order to get close to Little Red. Play it again, Sam—er, Martin—and give one more listen to see if you agree.

Alan Miesch
Rochester, New York

I enjoyed Martin Gardner's column about Little Red Riding Hood. However, I must correct one thing he said about the song Little Red Riding Hood by Sam the Sham and the Pharaohs. At the end, the wolf says, "I mean Baaaah! Baaaah!" not "I'm bad!"

The clue is that about halfway through is the line, "I'm keeping my sheep suit on." The wolf is willing to appear to be a harmless sheep until he convinces Red that "even bad wolves can be good."

Sorry to be pedantic on so small a point, but you must know how we baby boomers feel about our music.

Howard F. Heller
Mountlake Terrace, Washington

Martin Gardner misses the point of Little Red Riding Hood. The story did not become popular with children because it cautions them against failing to heed their mothers. There is an underlying sexual theme, and every five-year-old understands that Little Red recognizes the wolf in grandma's bedroom. Note that the wolf waits until he gets her into bed before pouncing. Both the wolf and Little Red are engaging in deception; the wolf pretends to be the grandmother, and Little Red pretends she doesn't know what is going on.

Gardner gives away the hidden meaning when he relates the earlier version in which Little Red unwittingly joins the wolf in eating her grandmother's flesh and drinking her blood. This is a subtle reference to the eucharist. The fable mocks Christianity's denial of natural sexuality. The wolf represents the corrupt priesthood, feigning asexuality while lusting after young maidens. When the hunter removes the two victims from the wolf's belly and replaces them with stones (representing testicles), he is exposing the wolf/priest as a sexual male, causing his downfall.

To think that fundamentalists are denouncing Teletubbies while Mother Goose is purveying this antireligious, X-rated filth to our little kiddies!

Richard Morrock
Bay Terrace, New York

A Thank You

I am simply writing to give thanks. The scientific reasoning used to show scams and hoaxes for what they truly are, and to also show that logic can prevail, is a credit to the integrity of work done at SKEPTICAL INQUIRER. The information is always accurate and a pleasure to read. I owe much of my current philosophy on life to the scientific minds working at SI (and many other institutions and publications as well) I often wonder what the world would be like if it was run by skeptics. I believe it would be the closest to an idealistic world we could come to at our current place in time.

Keep up the excellent work.

Adam Michael Misosky
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Wire-Dowser's Wire

It's a very small matter in comparison to the debunking, but in the News and Comment section ("Dowsing for Truth," September/October 2000) James Underdown talks about wire, saying at one point, "the thinner (12-gauge) wire . . . ." I assume he is saying thinner than 16-gauge wire. Of course 12-gauge is *thicker*, not thinner. This is only to clarify that the wire was in fact thicker...so the investigators were even more generous.

Jack Curtis
duveen@charter.net

James Underdown replies:

Sorry about the mix-up on the gauge of the wire in our experiment. The numbers were transposed.

'Top 10 Skeptics' Controversy

The article "The 10 Outstanding Skeptics of the Twentieth Century" (January/February 2000) generated much criticism (May/June 2000, pages 62–63).

Ernest Patridge writes that seven of the "winners" are all CSICOP founders, suggesting that "the list turned out to be CSICOP's celebration of itself." I presume, however, that it is just the other way 'round, and that those seven people are CSICOP founders *because* they are outstanding skeptics.

"Most were or are active in the final quarter of the century"; probably the reason is that during the first half of the century, when the skeptical movement was not what it is now, few authors wrote so many debunking books and articles as, for instance, Martin Gardner and Paul Kurtz. And maybe for a similar reason all ten winners are men, not women.

Jean Meeus
Erps-Kwerps, Belgium

Clued-Up TV Critic

It is easy to get depressed by the seemingly endless credulity and stupidity of the mass media, so I think it is important to salute those individuals who stand up for the cause of reason. I hope your readers enjoy this excerpt from a review by Victor Lewis-Smith in the *London Evening Standard* of a television program shown here in the United Kingdom called "UFOs over Phoenix":

> Three years ago, the residents of an Arizonan city professed to have seen several lights and "darks" (connected in a V-formation) hovering above them in the night sky, and many of them still hold regular meetings to discuss the potential celestial significance of these brief sightings. While I can, with difficulty, just about understand why medieval man was fascinated and overawed by the sight of unfamiliar objects hurtling across the heavens, our night skies are nowadays crammed to overflowing with all manner of planes, rockets, satellites, and weather balloons, so surely only a moron would regard a few unusual lights as a sure sign of the Second Coming, or of intergalactic visitors seeking to land in the vastness of the desert?

I have rarely seen the skeptical attitude towards UFO sightings so well put.

Toby Poynder
London, United Kingdom

Donate to Libraries

I'd like to make a suggestion to my fellow readers of SI. If you want to do something to counteract the flood of pseudoscientific nonsense, take an interest in your local public library.

If you haven't visited your library in a while, do so. Stroll the aisles. In addition to many fine books, magazines and videos, you may be surprised to find a lot of nonsense. You are likely to encounter materials about UFOs, haunted houses, quack medicine, "unsolved mysteries," astrology, and that old stand-by, creationism. Chance are, you won't see SI on the shelves.

Many libraries depend heavily on donations. Purveyors of creationism are particularly generous donors. Well, we can make donations, too. Books, magazines, audio tapes, and videos in good condition are generally accepted. They will likely accept gift subscriptions to SI and other reputable magazines. The chief librarian will be happy to discuss it with you. If enough of us do it, we can make a real difference.

Victor Commisso
Lebanon, Pennsylvania

For the Record

Two of the persons referred to in the book review of *Therapeutic Touch* (November/December 2000) are deceased: Martha Rogers died March 13, 1994. Dora van Gelder Kunz died August 25, 1999.

The letters column is a forum for views on matters raised in previous issues. Letters should be no more than 225 words. Due to the volume of letters not all can be published. Address letters to Letters to the Editor, SKEPTICAL INQUIRER. Send by mail to 944 Deer Dr. NE, Albuquerque, NM 87122; by fax to 505-828-2080; or by e-mail to letters@csicop.org (include name and address).

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Tim Trachet, journalist and science writer, honorary chairman of SKEPP, Belgium.

Neil deGrasse Tyson, astrophysicist, Princeton University and the Hayden Planetarium

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THE COMMITTEE FOR THE SCIENTIFIC INVESTIGATION OF CLAIMS OF THE PARANORMAL

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IC 418: The Spirograph Nebula

Glowing like a multi-faceted jewel, the planetary nebula IC 418 lies about 2,000 light-years from Earth in the constellation Lepus. In this picture, the Hubble telescope reveals some remarkable textures weaving through the nebula. Their origin, however, is still uncertain.

Credit: NASA and The Hubble Heritage Team (STScI/AURA).

The Committee is a nonprofit scientific and educational organization. The SKEPTICAL INQUIRER is its official journal.

The Committee for the Scientific Investigation of Claims of the Paranormal encourages the critical investigation of paranormal and fringe-science claims from a responsible, scientific point of view and disseminates factual information about the results of such inquiries to the scientific community, the media, and the public. It also promotes science and scientific inquiry, critical thinking, science education, and the use of reason in examining important issues. To carry out these objectives the Committee:

- Sponsors publications
- Conducts public outreach efforts
- Maintains an international network of people and groups interested in critically examining paranormal, fringe-science, and other claims, and in contributing to consumer education
- Encourages research by objective and impartial inquiry in areas where it is needed
- Convenes conferences and meetings
- Conducts educational programs at all age levels
- Does not reject claims on a priori grounds, antecedent to inquiry, but examines them objectively and carefully

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